NPort IA5250I/5250I-T User's Manual

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NPort IA5250I/5250I-T User's Manual

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1

Introduction

Welcome to the NPort IA Series of industrial serial device servers. In this manual, we refer to the seven products in the series collectively as “NPort IA5250I/5250I-T.”

The sixteen models in the NPort IA5250I/5250I-T are:

1. NPort IA5250I	2-port RS-232/422/485 (DB9) to Ethernet Device Server w/ 2KV Isolation protection
2. NPort IA5250I-T	2-port RS-232/422/485 (DB9) to Ethernet Device Server w/ 2KV Isolation protection, wide temperature(-40 to 75°C)

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Product Specifications**

Overview

The NPort IA5250I/5250I-T series of device servers deliver easy and reliable serial-to-Ethernet connectivity for the industrial automation market. The NPort IA5250I/5250I-T series is designed to allow any serial device to connect to an Ethernet network. The compact size of NPort IA device servers makes them an ideal choice for connecting RS-232/422/485 serial devices, such as PLCs, sensors, meters, motors, drives, barcode readers, and operator displays. The NPort IA5250I/5250I-T device servers come with a compact and rugged DIN-Rail mountable casing.

NPort IA serial device servers ensure the compatibility of network software that uses a standard network API (Winsock or BSD Sockets) by providing five modes: TCP Server, TCP Client, UDP, Pair Connection, Ethernet Modem, and Rtelnet. Thanks to NPort IA5250I/5250I-T series' Real COM/TTY drivers, software that works with COM/TTY ports can be set up to work over a TCP/IP network, without modifying the serial COM software applications. This excellent feature preserves your software investment and lets you enjoy the benefits of networking your serial devices instantly.

NPort IA serial device servers support automatic IP configuration protocols (DHCP, BOOTP) and manual configuration via a handy web browser console. Both methods ensure quick and effective installation. And with NPort IA5250I/5250I-T's Windows Utility, installation is very straightforward, since all system parameters can be stored and then copied to other device servers simultaneously.

Package Checklist

NPort IA5250I/5250I-T device servers are shipped with the following items:

Standard Accessories

- 1 NPort IA5250I/5250I-T serial device server.
- Documentation & Software CD.
- NPort IA5250I/5250I-T Quick Installation Guide.

Optional Accessories

- DR-4524: 45W/2A DIN-Rail 24 VDC Power Supply with universal 85 to 264 VAC input.
- DR-75-24: 75W/3.2A DIN-Rail 24 VDC Power Supply with universal 85 to 264 VAC input.
- DR-120-24: 120W/5A DIN-Rail 24 VDC Power Supply with 88 to 132 VAC/176 to 264 VAC input by switch.

NOTE: Notify your sales representative if any of the above items is missing or damaged.

Product Features

NPort IA5250I/5250I-T device servers have the following features:

- Make your serial devices Internet ready
- Versatile socket operating modes, including TCP Server, TCP Client, UDP, and Real COM driver
- 2- or 4-wire RS-485 with patented ADDC™ (Automatic Data Direction Control)
- Slim type, inch-wide industrial strength casing
- DIN-Rail or wall mountable
- Built-in Ethernet cascading ports for easy wiring (RJ45 only)
- Redundant dual DC power inputs
- Warning by relay output and E-mail
- IP30

Product Specifications

NPort IA5250I Serial Interface

Interface	RS-232/422/485	
No. of Ports	2	
Port Type	Male DB9	
Signals	RS-232:	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
	RS-422:	Tx+, Tx-, Rx+, Rx-, GND
	RS-485 (2-wire):	Data+, Data-, GND
	RS-485 (4-wire):	Tx+, Tx-, Rx+, Rx-, GND
Serial Line Protection	15 KV ESD for all signals	
RS-485 Data Direction	Patented ADDC™ (Automatic Data Direction Control)	

Power Line Protection

Level 4 Burst (EFT), EN61000-4-4

Level 3 Surge, EN61000-4-5

Advanced Built-in Features

Buzzer

Real-Time Clock

Watch Dog Timer

Serial Communication Parameters

Parity	None, Even, Odd, Space, Mark
Data Bits	5, 6, 7, 8
Stop Bit	1, 1.5, 2
Flow Control	RTS/CTS (for RS-232 only), XON/XOFF
Transmission Speed	50 bps to 921.6 Kbps

Software Features

Protocols	ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP
Utilities	NPort Administrator Windows 98/ME/NT/2000/XP/2003/Vista/2008/XP x64/2003 x64/Vista x64/2008 x64
OS Driver Support Real COM Drivers	Windows 95/98/ME/NT/2000/XP/Vista/2008/XP x64/2003/2003 x64/Vista x64/2008 x64/CE 5.0/CE 6.0/XP Embedded
Real TTY Drivers	Linux 2.4.x, 2.6.x kernel
Fixed TTY Drivers	SCO Unix, SCO OpenServer 5, OpenServer 6, UnixWare 7, UnixWare 2.1, SVR4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD 5, FreeBSD 6
Configuration	Web Browser, Telnet Console, Windows Utility or Serial Console

Power Requirements

Power Input	12 to 48 VDC
Alarm Contact	Relay output with current carrying capacity of 1A @ 24 VDC

Mechanical

Casing	IP30 protection
Dimensions (W × H × D)	29 × 89.2 × 118.5 mm
Gross Weight	5250: 0.16 kg (0.35 lb)

Environmental

Operating Temperature	0 to 55°C (32 to 131°F), 5 to 95%RH -40 to 75°C(-40 to 167°F), 5 to 95%RH for "-T" versions
Storage Temperature	-40 to 85°C (-4 to 185°F), 5 to 95%RH

Regulatory Approvals

EMC	CE (EN55022 Class A, EN55024), FCC Part 15 Subpart B Class A
Warranty	5 years

2

Getting Started

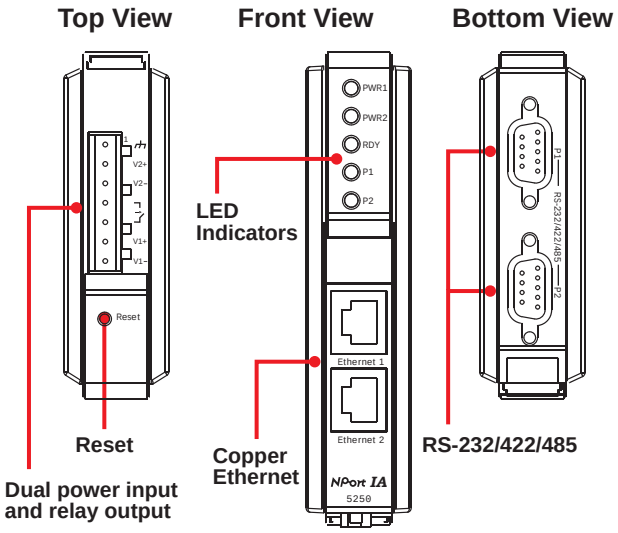
In this chapter, we give instructions on installing NPort IA5250I/5250I-T device servers. Software installation is covered in subsequent chapters.

The following topics are covered:

- **Panel Layout**
- **Connecting the Hardware**
  - Wiring Requirements
  - Connecting the Power
  - Grounding the NPort IA
  - Connecting to the Network
  - Connecting to a Serial Device
  - LED Indicators

Panel Layout

NPort IA 5250



Connecting the Hardware

This section describes how to connect NPort IA5250I/5250I-T to serial devices for first time testing purposes. We cover **Wiring Requirements, Connecting the Power, Grounding NPort IA5250I/5250I-T, Connecting to the Network, Connecting to a Serial Device,** and **LED Indicators**.

Wiring Requirements

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your NPort IA5250I/5250I-T.

Wiring Caution!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

Temperature Caution!

Please take care when handling NPort IA5250I/5250I-T. When plugged in, NPort IA5250I/5250I-T's internal components generate heat, and consequently the casing may feel hot to the touch. When installed with other components, make sure that there is at least 2 cm clearance on all sides of NPort IA5250I/5250I-T in order to allow proper heat dissipation.

You should heed the following:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

  NOTE: Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- Where necessary, it is strongly advised that you label wiring to all devices in the system.

Connecting the Power

Connect the 12-48 VDC power line with the NPort IA5250I/5250I-T's terminal block. If the power is properly supplied, the "Ready" LED will show a solid red color until the system is ready, at which time the "Ready" LED will change to a green color.

Grounding the NPort IA5250I/5250I-T

Grounding and wire routing helps limit the effects of noise caused by electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

WARNING

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel.

Connecting to the Network

Connect one end of the Ethernet cable to the NPort IA5250I/5250I-T's 10/100M Ethernet port and the other end of the cable to the Ethernet network. If the cable is properly connected, the NPort IA5250I/5250I-T will indicate a valid connection to the Ethernet in the following ways:

- The Ethernet LED maintains a solid green color when connected to a 100 Mbps Ethernet network.
- The Ethernet LED maintains a solid yellow color when connected to a 10 Mbps Ethernet network.
- The Ethernet LED will flash when Ethernet packets are being transmitted or received.

ATTENTION

NPort IA5150 and NPort IA5250 each have 2 Ethernet ports, which can be used to create an open chain of NPort IA device servers. You must be careful not to connect the Ethernet ports of the two device servers at the ends of the chain. In other words, NPort IA does NOT support a closed chain.

Connecting to a Serial Device

Connect the serial data cable between NPort IA5250I/5250I-T and the serial device. Serial data cables are optional accessories for NPort.

LED Indicators

The top panels of all NPort IA5250I/5250I-T have four LED indicators, as described in the following table.

LED Name	LED Color	LED Function
PWR1, PWR2	red	Power is being supplied to power input PWR1, PWR2.
Ready	red	Steady on: Power is on and NPort IA is booting up.
		Blinking: Indicates an IP conflict, or DHCP or BOOTP server did not respond properly, or a relay output occurred. When the above two conditions occur at the same time, check the relay output first. If after resolving the relay output the RDY LED is still blinking, then there is an IP conflict, or the DHCP or BOOTP server did not respond properly.
	green	Steady on: Power is on and NPort IA is functioning normally.
		Blinking: The device server has been located by Administrator's Location function.
	off	Power is off, or power error condition exists.
Ethernet	orange	10 Mbps Ethernet connection.
	green	100 Mbps Ethernet connection.
	off	Ethernet cable is disconnected, or has a short.
P1, P2	orange	Serial port is receiving data.
	green	Serial port is transmitting data.
	off	No data is being transmitted or received through the serial port.

3

Initial IP Address Configuration

When setting up your NPort IA5250I/5250I-T for the first time, the first thing you should do is configure the IP address. This chapter introduces the methods that can be used to configure the device server's IP address. ***Select one of the initial IP Address configuration methods to configure NPort IA5250I/5250I-T's IP Address***. For more details about network settings, see the ***Network Settings*** section from **Chapter 5, Web Console Configuration**.

This chapter includes the following sections:

- **Initializing the NPort's IP Address**
- **Factory Default IP Address**
- **NPort Administration Suite**
- **ARP**
- **Telnet Console**
- **Serial Console (19200, n, 8, 1)**

Initializing the NPort's IP Address

1. Determine whether your NPort IA5250I/5250I-T needs to use a Static IP or Dynamic IP (either DHCP or BOOTP application).
2. ***If NPort IA5250I/5250I-T is used in a Static IP environment***, you can use NPort IA5250I/5250I-T Administration Suite, ARP, Web Console, Telnet Console, or Serial Console to configure the new IP address.
3. ***If NPort IA5250I/5250I-T is used in a Dynamic IP environment***, you can use NPort IA5250I/5250I-T Administration Suite, Web Console, Telnet Console, or Serial Console to configure NPort IA5250I/5250I-T to get an IP address dynamically with DHCP, DHCP/BOOTP, or BOOTP.

ATTENTION

Consult your network administrator on how to reserve a fixed IP address for your NPort IA5250I/5250I-T in the MAC-IP mapping table when using a DHCP Server or BOOTP Server. In most applications, you should assign a fixed IP address to your NPort IA5250I/5250I-T.

Factory Default IP Address

NPort IA5250I/5250I-T products are configured with the following default private IP address:

Default IP address: 192.168.127.254

(IP addresses of the form 192.168.xxx.xxx are referred to as private IP addresses, since it is not possible to directly access a device configured with a private IP address from a public network. For example, you would not be able to ping such a device from an outside Internet connection. NPort IA5250I/5250I-T applications that require sending data over a public network, such as the Internet, require setting up the server with a valid public IP address, which can be leased from a local ISP.)

NPort Administration Suite

NPort Administration Suite consists of some useful utility programs that are used to configure and manage your NPort IA5250I/5250I-T.

See Chapter 5 for details on how to install NPort Administration Suite, and how to use this suite of useful utilities to set up IP addresses and configure your NPort IA5250I/5250I-T serial device servers.

ARP

You can make use of the ARP (Address Resolution Protocol) command to set up an IP address for your NPort IA5250I/5250I-T. The ARP command tells your computer to associate the NPort IA5250I/5250I-T's MAC address with the intended IP address. You must then use Telnet to access the NPort IA5250I/5250I-T, at which point the device server's IP address will be reconfigured.

ATTENTION

In order to use this setup method, both your computer and NPort IA5250I/5250I-T must be connected to the same LAN. Or, you may use a cross-over Ethernet cable to connect the NPort IA5250I/5250I-T directly to your computer's Ethernet card. Before executing the ARP command, your NPort IA5250I/5250I-T must be configured with the factory default IP address (192.168.127.254), and your computer and the NPort IA must be on the same subnet.

Take the following steps to use ARP to configure the IP address:

1. Obtain a valid IP address for your NPort IA5250I/5250I-T from your network administrator.
2. Obtain the NPort IA5250I/5250I-T's MAC address from the label on its bottom panel.
3. Execute the 'arp -s' command from your computer's MS-DOS prompt by typing:

   arp –s 192.168.200.100 00-90-E8-xx-xx-xx

This is where 192.168.200.100 is the new IP address and 00-90-E8-xx-xx-xx is the MAC address for your NPort IA5250I/5250I-T. (Be sure to use the actual IP address and MAC address for your NPort IA5250I/5250I-T.)

4. Next, execute a special Telnet command by typing:

```
telnet 192.168.200.100 6000
```

After issuing this command, a **Connect failed** message will appear, as shown here. After the NPort reboots, its IP address should be updated to the new address, and you can reconnect using either Telnet, Web, or Administrator to check that the update was successful.

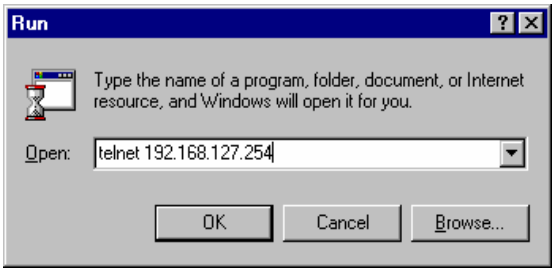
Telnet Console

Depending on how your computer and network are configured, you may find it convenient to use network access to set up your NPort IA5250I/5250I-T's IP address. This can be done using Telnet.

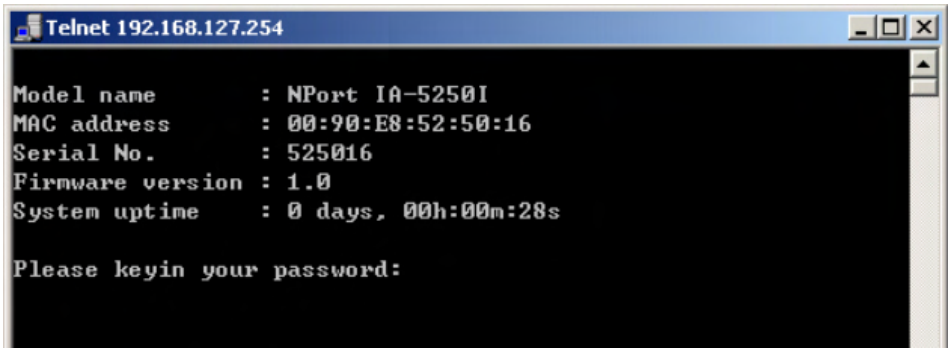
ATTENTION

Figures in this chapter were generated using NPort IA5250.

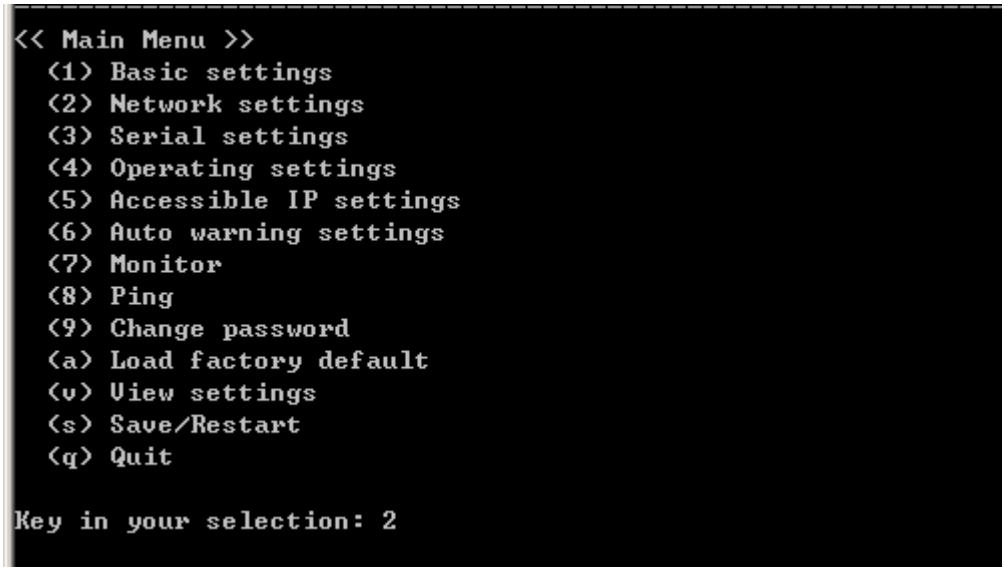
1. From the Windows desktop, click on **Start** and then select **Run**.
2. Type `telnet 192.168.127.254` (use the correct IP address if different from the default) in the **Open** text input box, and then click **OK**.



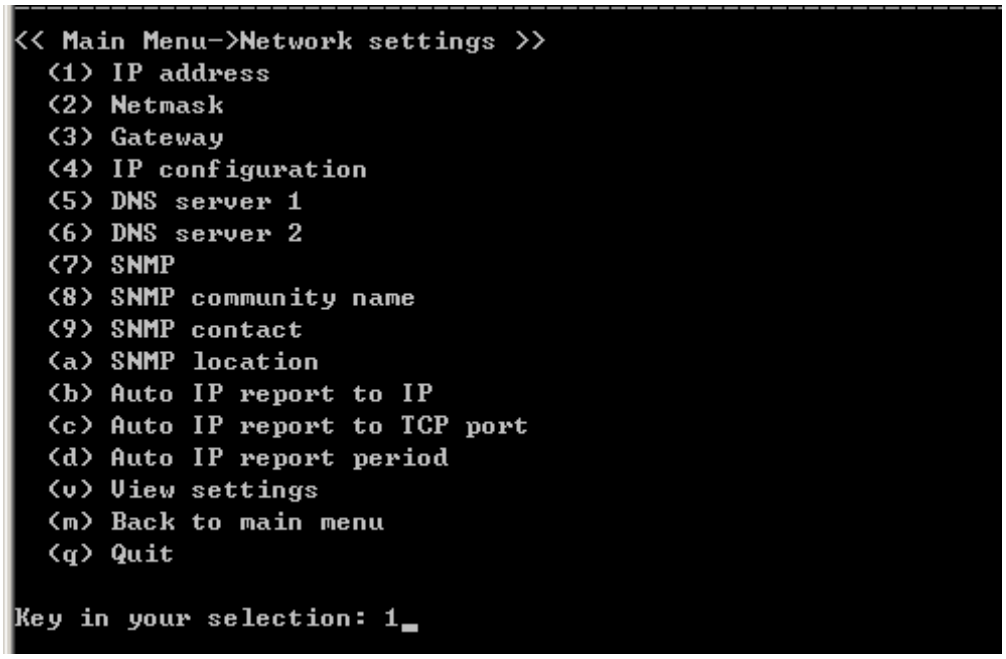
3. When the Telnet window opens, if you are prompted to input the **Console password**, input the password and then press **Enter**.
Note that this page will only appear if the NPort is password protected.


Telnet 192.168.127.254
Model name : NPort IA-5250I
MAC address : 00:90:E8:52:50:16
Serial No. : 525016
Firmware version : 1.0
System uptime : 0 days, 00h:00m:28s
Please keyin your password:

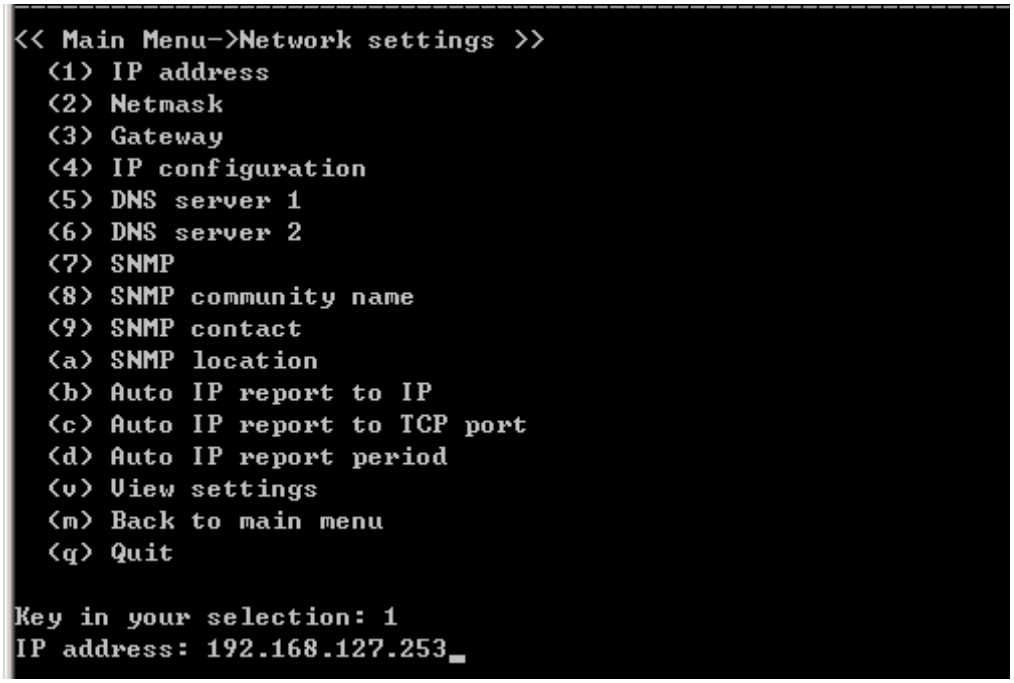
4. Type **2** to select **Network settings**, and then press **Enter**.



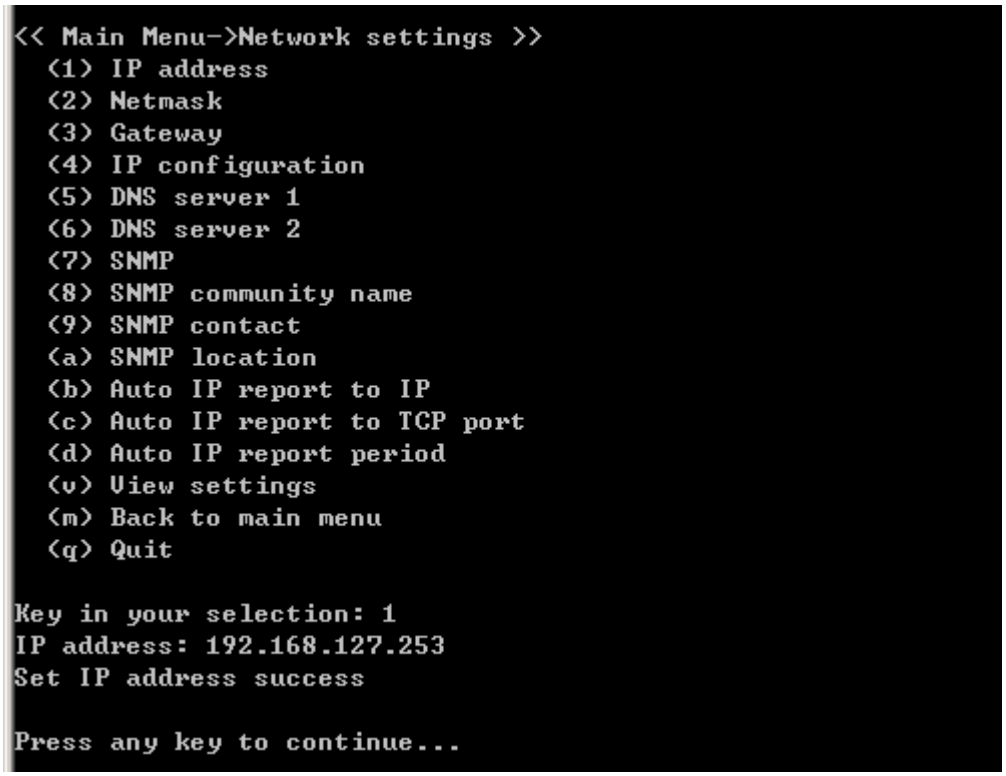
5. Type **1** to select **IP address** and then press **Enter**.



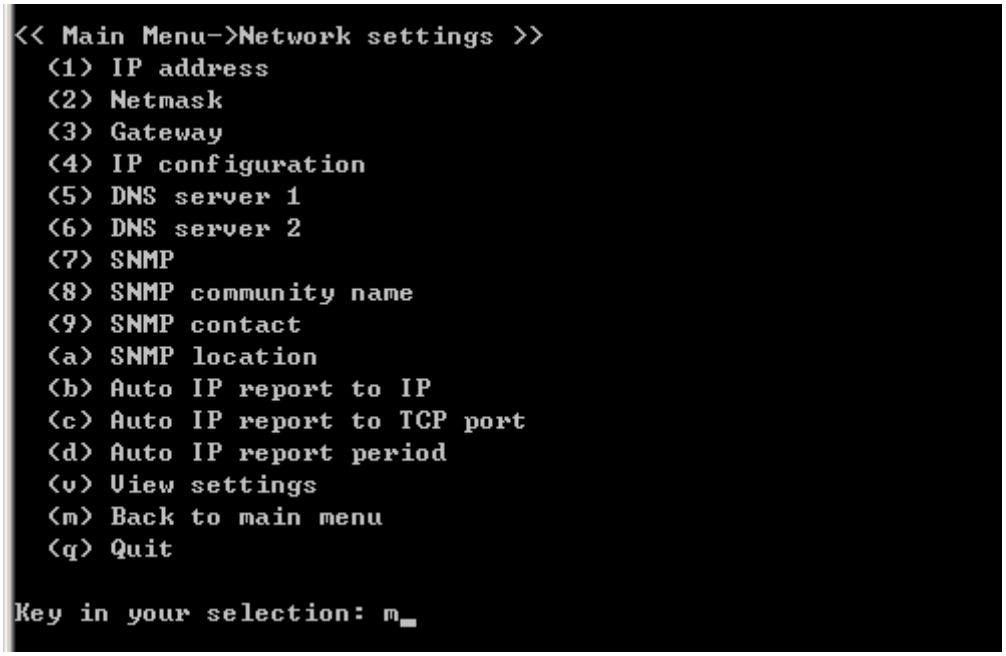
6. Use the **Backspace** key to erase the current IP address, type in the new IP address, and then press **Enter**.



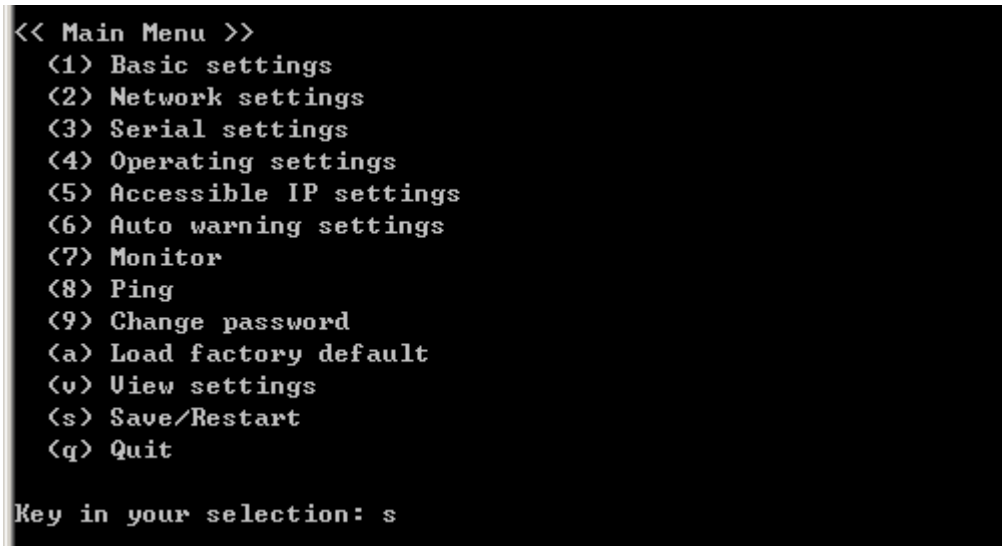
7. Press any key to continue…



8. Type **m** and then press **Enter** to return to the main menu.



9. Type **s** and then press **Enter** to **Save/Restart** the system.



10. Type **y** and then press **Enter** to save the new IP address and restart the NPort IA5250I/5250I-T.

Serial Console (19200, n, 8, 1)

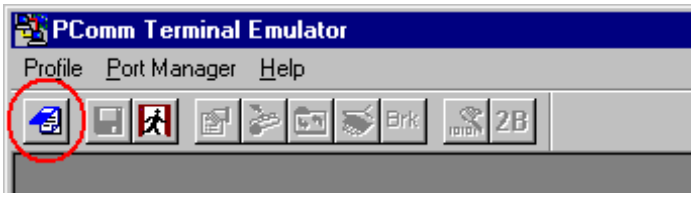
You may use the RS-232 console port to set up the IP address for NPort IA5250I/5250I-T. We suggest using PComm Terminal Emulator, which is available free of charge as part of the PComm Lite program suite, to carry out the installation procedure, although other similar utilities may also be used.

ATTENTION

The **Serial Console** is an RS-232 port (port 1 for NPort IA5250).

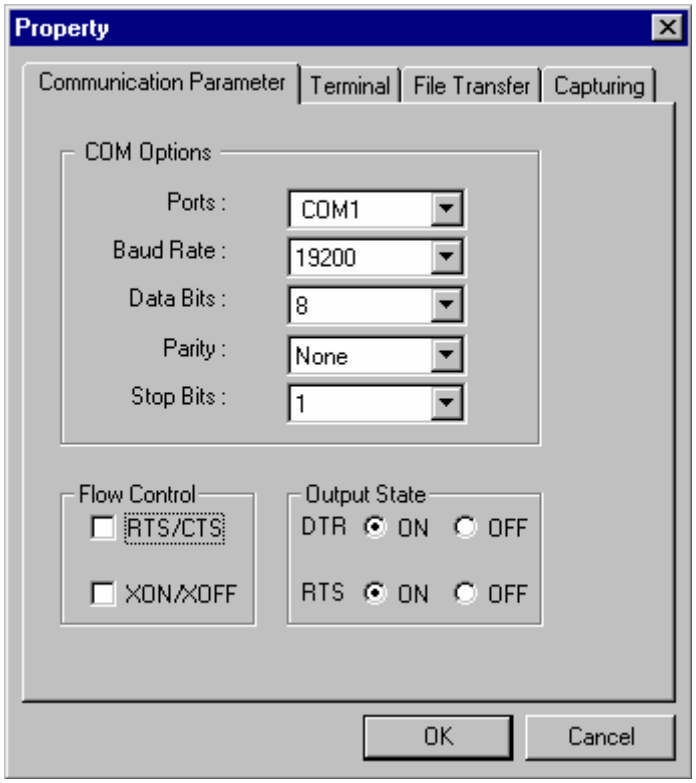
Before you start to configure the NPort IA5250I/5250I-T via serial console, turn off the power and connect the serial cable from NPort IA5250I/5250I-T to your computer's serial port.

1. Connect NPort IA5250I/5250I-T's serial port 1 directly to your computer's male RS-232 serial port.
2. From the Windows desktop click on **Start → Programs → PComm Lite → Terminal Emulator**.
3. When the PComm Terminal Emulator window opens, first click on the Port Manager menu item and select Open, or simply click on the Open icon.



4. The Property window opens automatically. From the Communication Parameter page, select the appropriate COM port for the connection, COM1 in this example, and 19200 for Baud Rate, 8 for Data Bits, None for Parity, and 1 for Stop Bits.
5. From the Property window's Terminal page, select ANSI or VT100 for Terminal Type and then click OK.

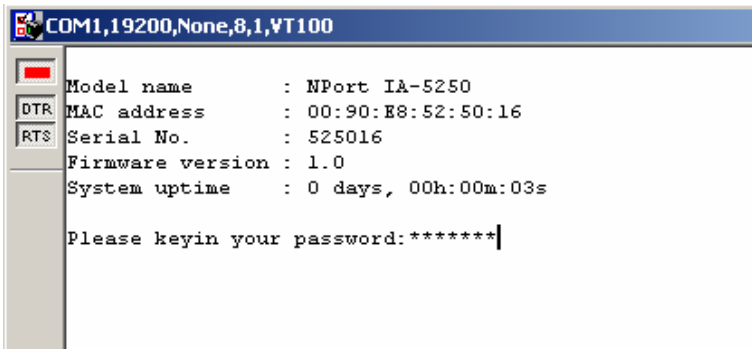
If you select Dumb Terminal as the terminal type, some of the console functions—especially the "Monitor" function—may not work properly.



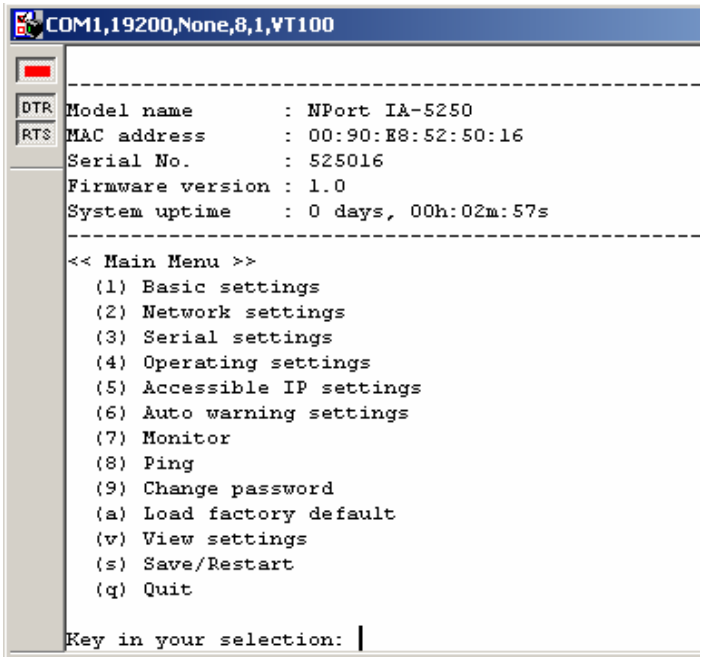
6. Press the " ` " key continuously and then power on the NPort IA5250I/5250I-T.

7. NPort IA5250I/5250I-T will automatically switch from data mode to console mode as it receives a continuous string of " ` ".

8. Input the password when prompted. Note that this page will only appear when the NPort IA5250I/5250I-T has been set up for password protection.



9. Start configuring the IP address under Network Settings. Refer to step 4 in the Telnet Console section for the rest of the IP settings.



4

Choosing the Proper Operation Mode

In this chapter, we describe the various NPort IA5250I/5250I-T operation modes. The options include an operation mode that uses a driver installed on the host computer, and operation modes that rely on TCP/IP socket programming concepts. After choosing the proper operation mode in this chapter, refer to Chapter 5 for detailed configuration parameter definitions.

The following topics are covered in this chapter:

- **Overview**
- **Real COM Mode**
- **TCP Server Mode**
- **TCP Client Mode**
- **UDP Mode**
- **Pair Connection Mode**
- **Ethernet Modem Mode**
- **Reverse Telnet Mode**
- **Disabled Mode**

Overview

NPort IA5250I/5250I-T Serial Device Servers network-enable traditional RS-232/422/485 devices, in which a Serial Device Server is a tiny computer equipped with a CPU, real-time OS, and TCP/IP protocols that can bi-directionally translate data between the serial and Ethernet formats. Your computer can access, manage, and configure remote facilities and equipment over the Internet from anywhere in the world.

Traditional SCADA and data collection systems rely on serial ports (RS-232/422/485) to collect data from various kinds of instruments. Since NPort IA5250I/5250I-T Serial Device Servers network-enable instruments equipped with an RS-232/422/485 communication port, your SCADA and data collection system will be able to access all instruments connected to a standard TCP/IP network, regardless of whether the devices are used locally or at a remote site.

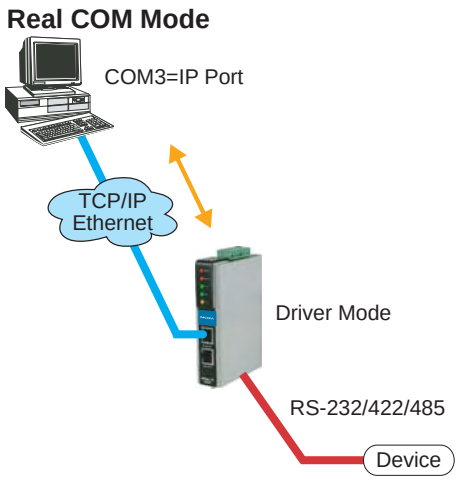
NPort IA5250I/5250I-T is an external IP-based network device that allows you to expand the number of serial ports for a host computer on demand. As long as your host computer supports the TCP/IP protocol, you won't be limited by the host computer's bus limitation (such as ISA or PCI), or lack of drivers for various operating systems.

In addition to providing socket access, NPort IA5250I/5250I-T also comes with a Real COM/TTY driver that transmits all serial signals intact. This means that your existing COM/TTY-based software can be preserved, without needing to invest in additional software.

Three different Socket Modes are available: TCP Server, TCP Client, and UDP Server/Client. The main difference between the TCP and UDP protocols is that TCP guarantees delivery of data by requiring the recipient to send an acknowledgement to the sender. UDP does not require this type of verification, making it possible to offer speedier delivery. UDP also allows unicast or multicast of data to only one IP or groups of IP addresses.

Real COM Mode

NPort IA5250I/5250I-T comes equipped with COM drivers that work with Window 95/98/ME/NT/2000/XP systems, and also TTY drivers for Linux systems. The driver establishes a transparent connection between host and serial device by mapping the IP:Port of the NPort IA5250I/5250I-T's serial port to a local COM/TTY port on the host computer. Real COM Mode also supports up to 4 simultaneous connections, so that multiple hosts can collect data from the same serial device at the same time.



ATTENTION

The driver used for Real COM Mode comes with the NPort IA5250I/5250I-T NPort Administrator. The driver is installed automatically on your computer when you install NPort IA5250I/5250I-T Administration Suite.

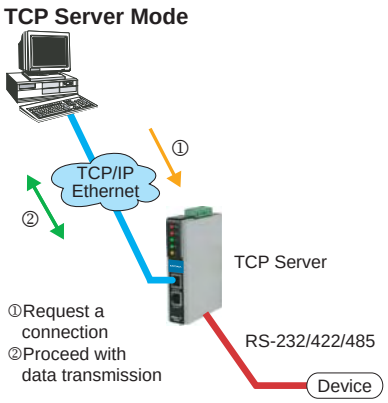
One of the major conveniences of using Real COM Mode is that Real COM Mode allows users to continue using RS-232/422/485 serial communications software that was written for pure serial communications applications. The driver intercepts data sent to the host's COM port, packs it into a TCP/IP packet, and then redirects it through the host's Ethernet card. At the other end of the connection, the NPort IA5250I/5250I-T accepts the Ethernet frame, unpacks the TCP/IP packet, and then transparently sends it to the appropriate serial device attached to one of the NPort IA5250I/5250I-T's serial ports.

ATTENTION

Real COM Mode allows several hosts to have access control over the same NPort IA5250I/5250I-T. The driver that comes with your NPort IA5250I/5250I-T controls host access to attached serial devices by checking the host's IP address. Refer to Accessible IP Settings in Chapter 5 for more details.

TCP Server Mode

In TCP Server mode, NPort IA5250I/5250I-T is configured with a unique IP:Port address on a TCP/IP network. NPort IA5250I/5250I-T waits passively to be contacted by the host computer, allowing the host computer to establish a connection with and get data from the serial device. This operation mode also supports up to 4 simultaneous connections, so that multiple hosts can collect data from the same serial device—at the same time.



As illustrated in the figure, data transmission proceeds as follows:

1. The host requests a connection from the NPort IA5250I/5250I-T configured for TCP Server Mode.
2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort IA5250I/5250I-T, and from the NPort IA5250I/5250I-T to the host.

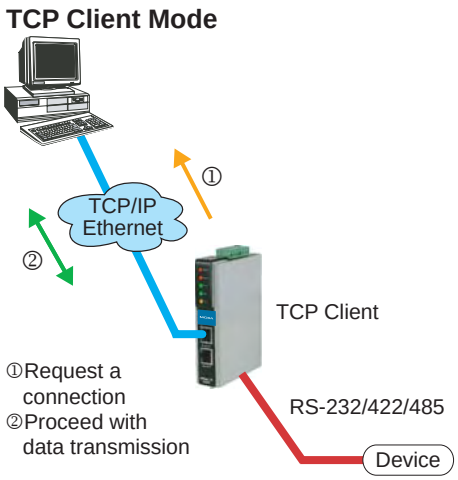
TCP Client Mode

In **TCP Client mode**, the NPort IA5250I/5250I-Tcan actively establish a TCP connection to a pre-defined host computer when serial data arrives.

After the data has been transferred, the NPort can automatically disconnect from the host computer by using the **TCP alive check time** or **Inactivity time** settings. Refer to chapter 5 for more details.

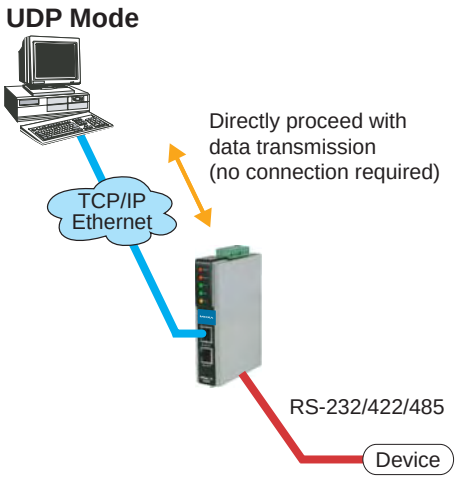
As illustrated in the figure, data transmission proceeds as follows:

1. The NPort IA5250I/5250I-T configured for TCP Client Mode requests a connection from the host.
2. Once the connection is established, data can be transmitted in both directions—from the host to the NPort IA5250I/5250I-T, and from the NPort IA5250I/5250I-T to the host.



UDP Mode

Compared to TCP communication, UDP is faster and more efficient. In UDP mode, you can multicast data from the serial device to multiple host computers, and the serial device can also receive data from multiple host computers, making this mode ideal for message display applications.



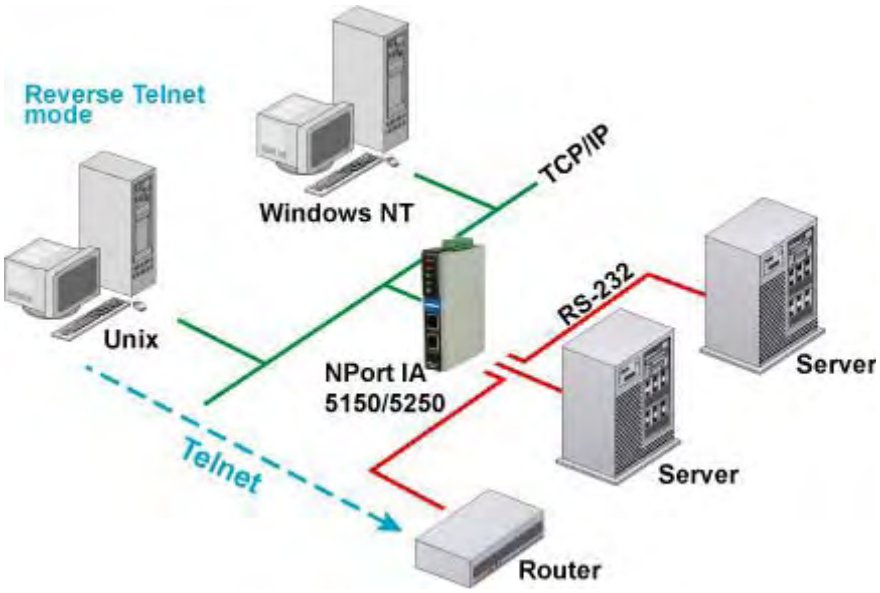
Pair Connection Mode

Pair Connection Mode employs two NPort IA5250I/5250I-T units in tandem, and can be used to remove the 15-meter distance limitation imposed by the RS-232 interface. One NPort IA5250I/5250I-T is connected from its RS-232 port to the COM port of a PC or other type of computer, such as a hand-held PDA, and the serial device is connected to the RS-232 port of the other NPort IA5250I/5250I-T. The two NPort IA5250I/5250I-T units are then connected to each other with a cross-over Ethernet cable, both are connected to the same LAN, or in a more advanced setup, they communicate with each other over a WAN (i.e., through one or more routers). Pair Connection Mode transparently transfers both data and modem control signals (although it cannot transmit the DCD signal) between the two NPort device servers.

Ethernet Modem Mode

Ethernet Modem Mode is designed for use with legacy operating systems, such as MS-DOS, that do not support TCP/IP Ethernet. By connecting one of NPort IA5250I/5250I-T's serial port to the MS-DOS computer's serial port, it is possible to use legacy software originally designed to transmit data via modem, but now transmit the data over the Ethernet.

Reverse Telnet Mode



Console management is commonly used by connecting to Console/AUX or COM ports of routers, switches, and UPS units. Rtelnet works the same as RAW mode in that only one TCP port is listened to after booting up. The system then waits for a host on the network to initiate a connection. The difference is that the RAW mode does not provide the conversion function provided by Telnet. If the connected devices need to use the CR/LF conversion function when controlling, then users must choose Rtelnet mode.

Disabled Mode

When the Operation Mode for a particular port is set to **Disabled**, that port will be disabled.

5

Web Console Configuration

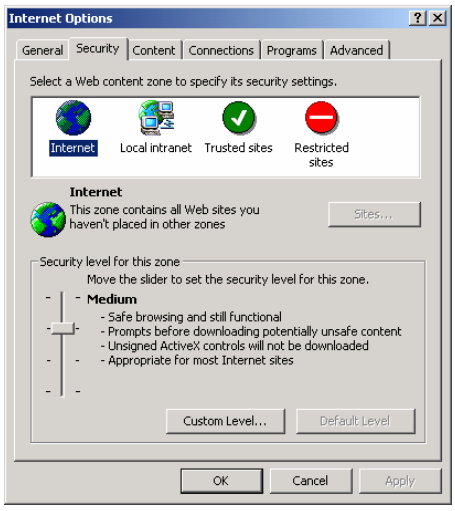
The Web Console is the most user-friendly way to configure the NPort IA5250I/5250I-T series products. This chapter will introduce the Web Console function groups and function definitions.

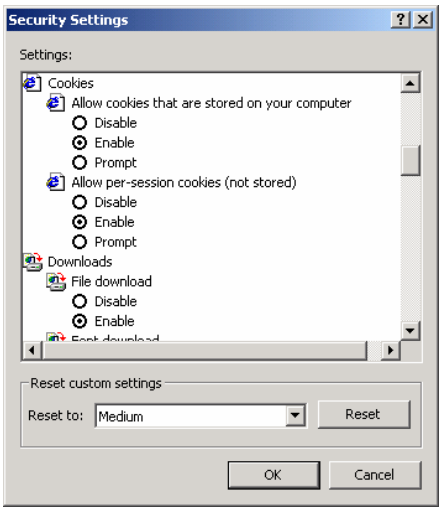
This following topics are covered in this chapter:

- **Opening Your Browser**
- **Basic Settings**
- **Network Settings**
- **SNMP Settings**
  - IP Address Report
- **Serial Settings**
  - Serial Parameters
- **Operating Settings**
  - Real COM Mode
  - TCP Server Mode
  - TCP Client Mode
  - UDP Mode
  - Pair Connection Mode
  - Ethernet Modem Mode
  - Reverse Telnet Mode
  - Disabled Mode
- **Accessible IP Settings**
- **Auto Warning Settings**
  - Auto warning: E-mail and SNMP trap
  - Event Type
- **Monitor**
  - Monitor Line
  - Monitor Async
  - Monitor Async-Settings
- **Change Password**
- **Load Factory Default**

Opening Your Browser

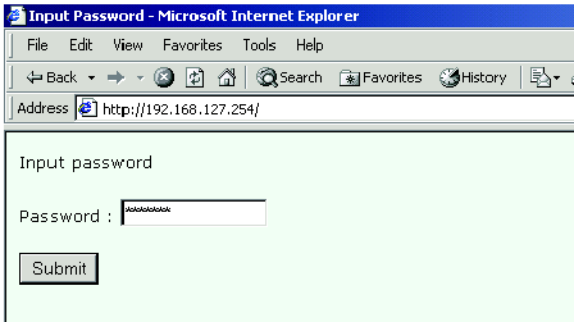
1. Open your browser with the cookie function enabled. (To enable your browser for cookies, right click on your desktop Internet Explorer icon, select Properties, click on the Security tab, and then select the three Enable options as shown in the figure below.)





2. Type **192.168.127.254** in the **Address** input box (use the correct IP address if different from the default), and then press **Enter**.

3. Input the password if prompted. The password will be transmitted with MD5 encryption over the Ethernet.
   Note that you will not be prompted to enter the password if the NPort IA5250I/5250I-T is not currently password protected.



ATTENTION

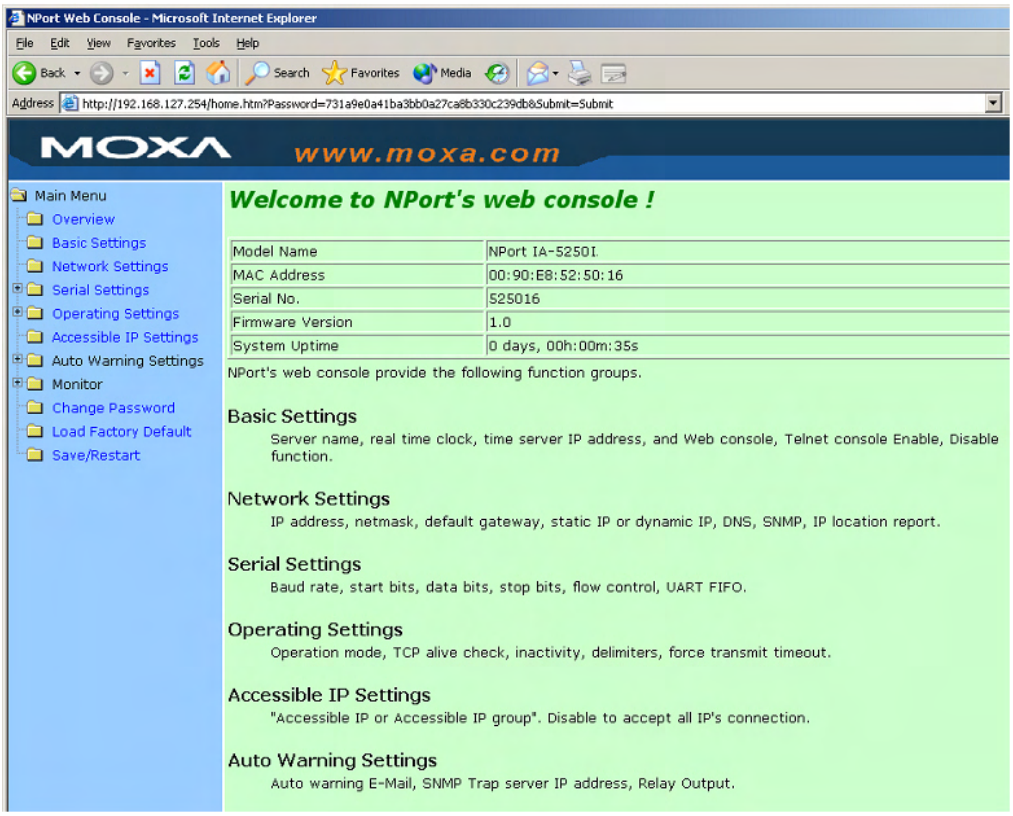
If you use other web browsers, remember to Enable the functions to "allow cookies that are stored on your computer" or "allow per-session cookies."

NPort IA5250I/5250I-T device servers use cookies only for "password" transmission.

ATTENTION

Refer to Chapter 3, "Initial IP Address Configuration," to see how to configure the IP address. Examples shown in this chapter use the Factory Default IP address (192.168.127.254).

The NPort IA5250I/5250I-T homepage will open. On this page, you can see a brief description of the Web Console's nine function groups.


NPort Web Console - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://192.168.127.254/home.htm?Password=731a9e0a41ba3bb0a27ca8b330c239db8&Submit=Submit
MOXA www.moxa.com
Main Menu
Overview
Basic Settings
Network Settings
Serial Settings
Operating Settings
Accessible IP Settings
Auto Warning Settings
Monitor
Change Password
Load Factory Default
Save/Restart
Welcome to NPort's web console !
Model Name NPort IA-5250I
MAC Address 00:90:E8:52:50:16
Serial No. 525016
Firmware Version 1.0
System Uptime 0 days, 00h:00m:35s
NPort's web console provide the following function groups.
Basic Settings
Server name, real time clock, time server IP address, and Web console, Telnet console Enable, Disable function.
Network Settings
IP address, netmask, default gateway, static IP or dynamic IP, DNS, SNMP, IP location report.
Serial Settings
Baud rate, start bits, data bits, stop bits, flow control, UART FIFO.
Operating Settings
Operation mode, TCP alive check, inactivity, delimiters, force transmit timeout.
Accessible IP Settings
"Accessible IP or Accessible IP group". Disable to accept all IP's connection.
Auto Warning Settings
Auto warning E-Mail, SNMP Trap server IP address, Relay Output.

ATTENTION

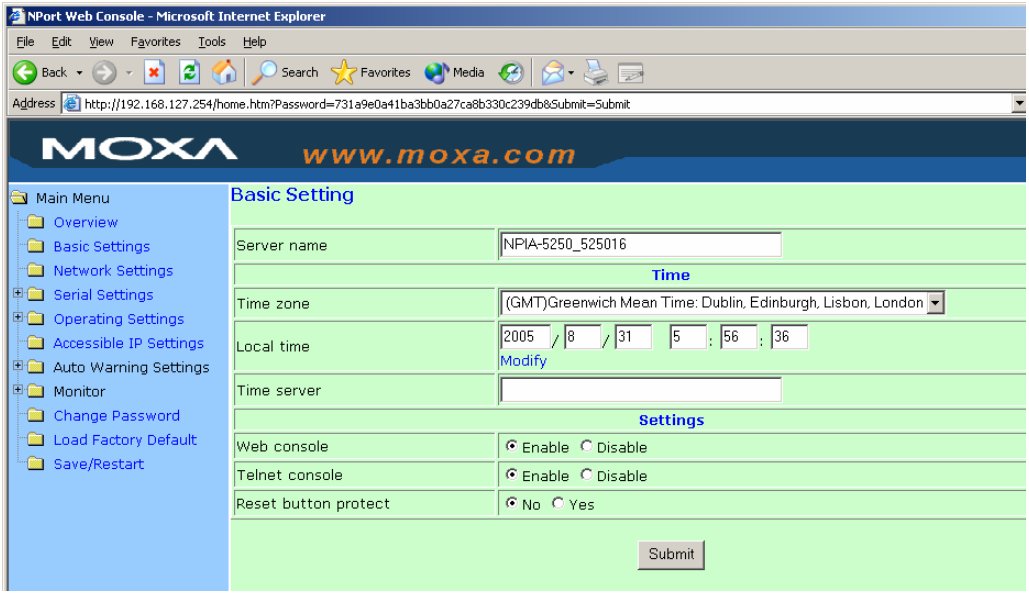
If you can't remember the password, the ONLY way to start configuring the NPort IA5250I/5250I-T is to load factory defaults by using the Reset button located near the NPort's RJ45 Ethernet port.

Remember to use NPort Administrator to export the configuration file when you have finished the configuration. After using the Reset button to load factory defaults, your configuration can be easily reloaded into the NPort IA5250I/5250I-T by using the NPort Administrator Import function. Refer to Chapter 6 for more details about using the Export and Import functions.

ATTENTION

If your NPort IA5250I/5250I-T application requires using password protection, you must enable the cookie function in your browser. If the cookie function is disabled, you will not be allowed to enter the Web Console Screen.

Basic Settings



Server name

Setting	Factory Default	Necessity
1 to 39 characters	NP[model name]_[Serial No.]	Optional

This option is useful for specifying the location or application of different NPort IA5250I/5250I-Ts.

Time

NPort IA5250I/5250I-T has a built-in Real-Time Clock for time calibration functions. Functions such as Auto warning "Email" or "SNMP Trap" can add real-time information to their messages.

ATTENTION

First time users should select the time zone first. The Console will display the "real time" according to the time zone compared to GMT.

If you would like to modify the real time clock, select "Local time." NPort IA5250I/5250I-T's firmware will modify the GMT time according to the Time Zone.

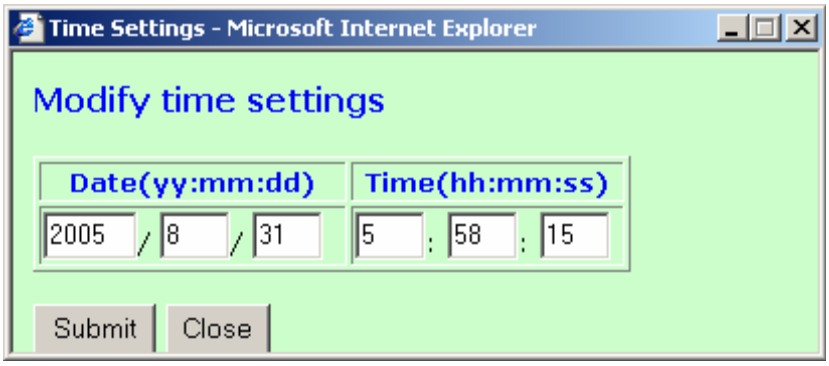
Time zone

Setting	Factory Default	Necessity
User selectable time zone	GMT (Greenwich Mean Time)	Required

Local time

Setting	Factory Default	Necessity
User adjustable time (1900/1/1-2037/12/31)	GMT (Greenwich Mean Time)	Required

Click on the **Modify** button to open the **Modify time settings** window to input the correct local time.



Time server

Setting	Factory Default	Necessity
IP or Domain address (E.g., 192.168.1.1 or time.stdtime.gov.tw or time.nist.gov)	None	Optional

NPort IA5250I/5250I-T uses SNTP (RFC-1769) for auto time calibration.

Input the correct "Time server" IP address or domain name. Once NPort IA5250I/5250I-T is configured with the correct Time server address, NPort IA5250I/5250I-T will request time information from the "Time server" every 10 minutes.

Web/Telnet Console

The "Disable" option for "Web Console" and "Telnet Console" is included for security reasons. In some cases, you may want to disable one or both of these console utilities as an extra precaution to prevent unauthorized users from accessing your NPort IA5250I/5250I-T. The factory default for both Web console and Telnet console is **Enable**.

Web console

Setting	Factory Default	Necessity
Enable or Disable	Enable	Required

Telnet console

Setting	Factory Default	Necessity
Enable or Disable	Enable	Required

ATTENTION

If you disable both the "Web console" and "Telnet console," you can still use NPort Administrator to configure NPort IA5250I/5250I-T device servers either locally or remotely over the network. Refer to Chapter 6 for more details.

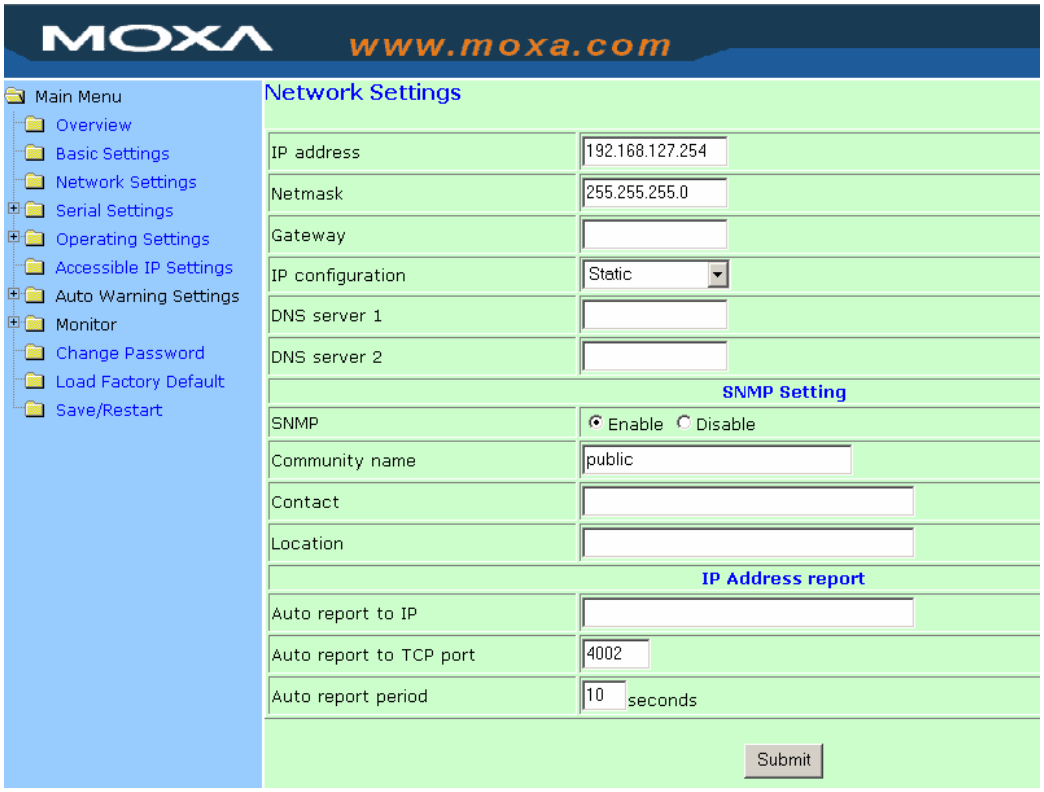
Reset button protect

Setting	Factory Default	Necessity
No or Yes	No	Required

Options are **No** and **Yes**, with default = **No**.

NOTE: Select the **Yes** option to allow limited use of the Reset Button. In this case, the Reset Button can be used for only 60 seconds. I.e., 60 sec. after booting up, the Reset Button will be disabled automatically.

Network Settings



You must assign a valid IP address to NPort IA5250I/5250I-T before it will work in your network environment. Your network system administrator should provide you with an IP address and related settings for your network. The IP address must be unique within the network (otherwise, NPort IA5250I/5250I-T will not have a valid connection to the network). First time users can refer to Chapter 3, "Initial IP Address Configuration," for more information.

You can choose from four possible "IP configuration" modes—**Static, DHCP, DHCP/BOOTP, and BOOTP**—located under the web console screen's IP configuration drop-down box.

Method	Function Definition
Static	**User defined** IP address, Netmask, Gateway.
DHCP	DHCP Server assigned IP address, Netmask, Gateway, DNS, and Time Server
DHCP/BOOTP	DHCP Server assigned IP address, Netmask, Gateway, DNS, and Time Server, or BOOTP Server assigned IP address (if the DHCP Server does not respond)
BOOTP	BOOTP Server assigned IP address

IP Address

Setting	Factory Default	Necessity
E.g., 192.168.1.1 (IP addresses of the form *x.x.x*.0 and *x.x.x*.255 are invalid.)	192.168.127.254	Required

An IP address is a number assigned to a network device (such as a computer) as a permanent address on the network. Computers use the IP addressed to identify and talk to each other over the network. Choose a proper IP address which is unique and valid in your network environment.

Netmask

Setting	Factory Default	Necessity
E.g., 255.255.255.0	255.255.255.0	Required

A subnet mask represents all of the network hosts at one geographic location, in one building, or on the same local area network. When a packet is sent out over the network, the NPort IA5250I/5250I-T will use the subnet mask to check whether the desired TCP/IP host specified in the packet is on the local network segment. If the address is on the same network segment as the NPort IA5250I/5250I-T, a connection is established directly from the NPort IA5250I/5250I-T. Otherwise, the connection is established through the given default gateway.

Gateway

Setting	Factory Default	Necessity
E.g., 192.168.1.1	None	Optional

A gateway is a network gateway that acts as an entrance to another network. Usually, the computers that control traffic within the network or at the local Internet service provider are gateway nodes. NPort IA5250I/5250I-T needs to know the IP address of the default gateway computer in order to communicate with the hosts outside the local network environment. For correct gateway IP address information, consult the network administrator.

IP Configuration

Setting	Factory Default	Necessity
Static DHCP DHCP/BOOTP BOOTP	Static	Required

ATTENTION

In Dynamic IP environments, the firmware will retry 3 times every 30 seconds until network settings are assigned by the DHCP or BOOTP server. The Timeout for each try increases from 1 second, to 3 seconds, to 5 seconds.

If the DHCP/BOOTP Server is unavailable, the firmware will use the default IP address (192.168.127.254), Netmask, and Gateway for IP settings.

DNS server 1 / DNS server 2

Setting	Factory Default	Necessity
E.g., 192.168.1.1 (IP addresses of the form *x.x.x*.0 and *x.x.x*.255 are invalid.)	None	Optional

When the user wants to visit a particular website, the computer asks a Domain Name System (DNS) server for the website's correct IP address, and then the computer uses the response to connect to the web server. DNS is the way that Internet domain names are identified and translated into IP addresses. A domain name is an alphanumeric name, such as moxa.com, that it is usually easier to remember. A DNS server is a host that translates this kind of text-based domain name into the numeric IP address used to establish a TCP/IP connection.

In order to use NPort IA5250I/5250I-T's DNS feature, you need to configure the DNS server. Doing so allows NPort IA5250I/5250I-T to use a host's domain name to access the host. NPort IA5250I/5250I-T provides **DNS server 1** and **DNS server 2** configuration items to configure the IP address of the DNS server. DNS Server 2 is included for use when DNS sever 1 is unavailable.

NPort IA5250I/5250I-T plays the role of DNS client, in the sense that the NPort IA5250I/5250I-T will actively query the DNS server for the IP address associated with a particular domain name. NPort IA5250I/5250I-T functions that support domain name are **Time server, Destination IP Address in TCP Client mode, Mail Server, SNMP trap server, and Auto report to IP**.

SNMP Settings

Community Name

Setting	Factory Default	Necessity
1 to 39 characters (E.g., Support, 886-89191230 #300)	public	Optional

A community name is a plain-text password mechanism that is used to weakly authenticate queries to agents of managed network devices.

Contact

Setting	Factory Default	Necessity
1 to 39 characters (E.g., Support, 886-89191230 #300)	None	Optional

The SNMP contact information usually includes an emergency contact name and telephone or pager number.

Location

Setting	Factory Default	Necessity
1 to 39 characters (E.g., Floor 1, office 2)	None	Optional

Specify the location string for SNMP agents such as NPort IA5250I/5250I-T. This string is usually set to the street address where the NPort IA5250I/5250I-T is physically located.

IP Address Report

When NPort IA5250I/5250I-T products are used in a dynamic IP environment, users must spend more time with IP management tasks. For example, if NPort IA5250I/5250I-T works as a server (TCP or UDP), then the host, which acts as a client, must know the IP address of the server. If the DHCP server assigns a new IP address to NPort IA5250I/5250I-T, the host must have some way of determining NPort IA5250I/5250I-T's new IP address.

NPort IA5250I/5250I-T products help out by reporting their IP address periodically to the IP location server, in case the dynamic IP has changed. The parameters shown below are used to configure the Auto IP report function. There are two ways to develop an "Auto IP report Server" to receive NPort IA5250I/5250I-T's Auto IP report.

1. Use Device Server Administrator's IP Address Report function.
2. "Auto IP report protocol," which can receive the Auto IP report automatically on a regular basis, is also available to help you develop your own software. Refer to Appendix E for the "Auto IP report protocol."

Auto report to IP

Setting	Factory Default	Necessity
E.g., 192.168.1.1 or URL (IP addresses of the form *x.x.x*.0 and *x.x.x*.255 are invalid.)	None	Optional

Reports generated by the Auto report function will be automatically sent to this IP address.

Auto report to UDP port

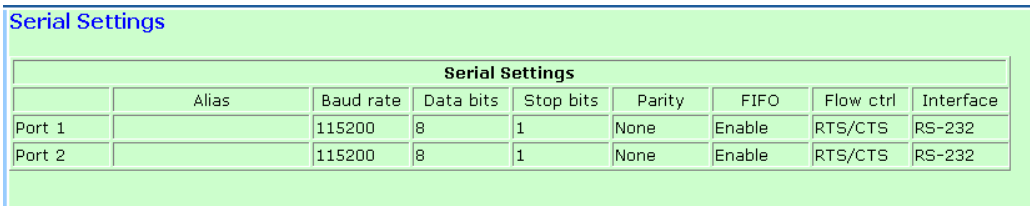
Setting	Factory Default	Necessity
E.g., 4001	4002	Optional

Auto report period

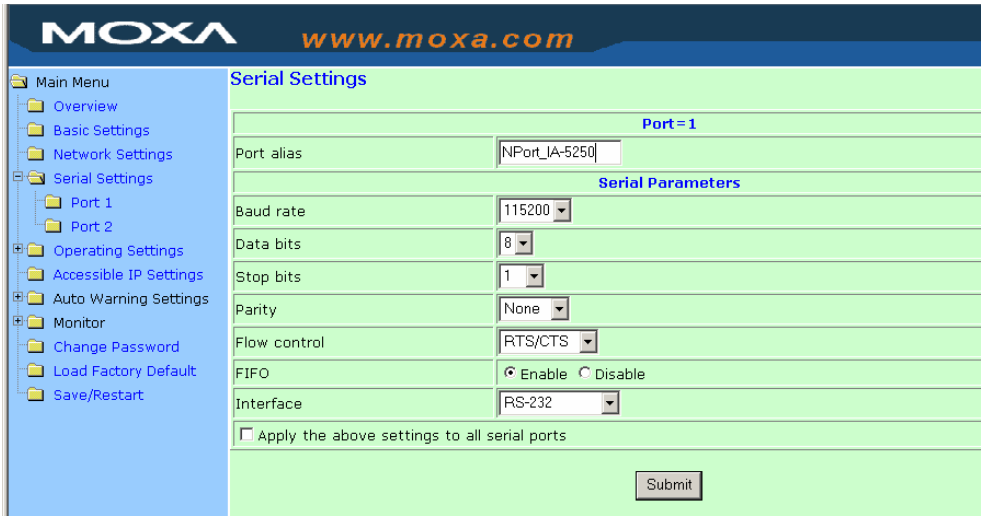
Setting	Factory Default	Necessity
Time interval (in seconds)	10	Optional

Serial Settings

Click on **Serial Settings**, located under **Main Menu**, to display serial port settings for ports 1 and 2.



To modify serial settings for a particular port, click on either **Port 1** or **Port 2** under **Serial Settings**, located under **Main Menu** on the left side of the browser window.



Port alias

Setting	Factory Default	Necessity
1 to 15 characters (E.g., PLC-No.1)	None	Optional

Port Alias is specially designed to allow easy identification of the serial devices which are connected to the NPort's serial port.

Serial Parameters

ATTENTION

Check the serial communication parameters in your Serial Device's user's manual. You should set up the NPort IA5250I/5250I-T's serial parameters with the same communication parameters used by your serial devices.

Baud rate

Setting	Factory Default	Necessity
110 bps to 230400 bps	115200 bps	Required

Data bits

Setting	Factory Default	Necessity
5, 6, 7, 8	8	Required

When the user sets Data bits to 5 bits, the stop bits setting will automatically change to 1.5 bits.

Stop bits

Setting	Factory Default	Necessity
1, 2	1	Required

Stop bits will be set to 1.5 when Data bits is set to 5 bits.

Parity

Setting	Factory Default	Necessity
None, Even, Odd, Space, Mark	None	Required

Flow control

Setting	Factory Default	Necessity
None, RTS/CTS, DTR/DSR, Xon/Xoff	RTS/CTS	Required

FIFO

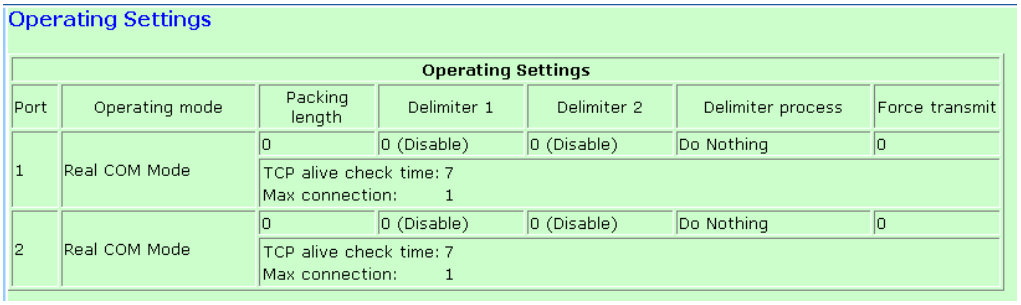
Setting	Factory Default	Necessity
Enable, Disable	Enable	Required

NPort IA5250I/5250I-T's serial ports provide a 16-byte FIFO both in the Tx and Rx directions. To prevent data loss during communication, disable the FIFO setting when your serial device does not have a FIFO.

Interface

Setting	Factory Default	Necessity
RS-232 RS-422 2-wire RS-485 4-wire RS-485	RS-232	Required

Operating Settings

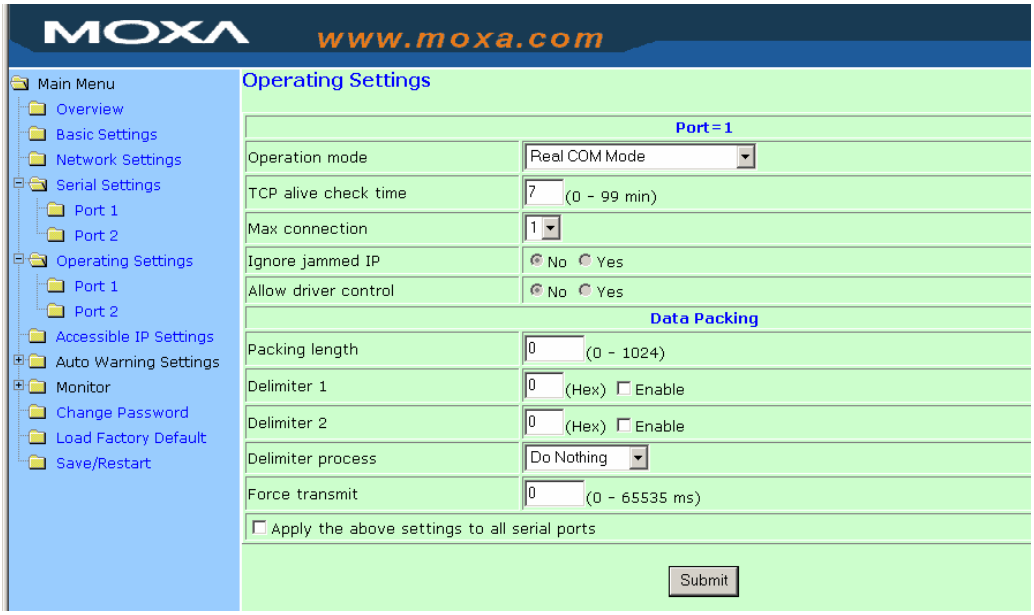


Operating Settings

Operating Settings						
Port	Operating mode	Packing length	Delimiter 1	Delimiter 2	Delimiter process	Force transmit
1	Real COM Mode	0	0 (Disable)	0 (Disable)	Do Nothing	0
		TCP alive check time: 7 Max connection: 1				
2	Real COM Mode	0	0 (Disable)	0 (Disable)	Do Nothing	0
		TCP alive check time: 7 Max connection: 1				

Click on **Operating Settings**, located under **Main Menu**, to display the operating settings for both of NPort IA5250I/5250I-T's serial ports.

Real COM Mode



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort IA5250I/5250I-T automatically closes TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort IA5250I/5250I-Tstarts listening for another Real COM driver's connection from another host.

Max connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default is 1. In this case, only one specific host can access this port of the NPort IA5250I/5250I-T, and the Real COM driver on that host will have full control over the port.

Max. Connection 1:
Allows only 1 host's Real COM driver to open the specific NPort IA5250I/5250I-T serial port.

Max Connection 2 to 4:
Allows 2 to 4 host's Real COM drivers to open the specific NPort IA5250I/5250I-T serial port, at the same time. When multiple hosts' Real COM drivers open the serial port at the same time, the COM driver only provides a pure data tunnel without control ability. That is, this serial port parameter will use firmware's settings, not depend on your application program (AP).

Application software that is based on the COM driver will receive a driver response of "success" when the software uses any of the Win32 API functions. The firmware will only send the data back to the driver on the host.

Data will be sent first-in-first-out when data comes into the NPort from the Ethernet interface.

ATTENTION

When Max connection is set to 2, 3, or 4, this means that NPort IA5250I/5250I-T will be using a "multi connection application" (i.e., 2, 3, or 4 hosts are allowed access to the port at the same time). When using a multi connection application, NPort IA5250I/5250I-T will use the serial communication parameters set in the console. All of the hosts connected to that port must use the same serial settings. If one of the hosts opens the COM port with parameters that are different from NPort IA5250I/5250I-T's console setting, data communication may not work properly.

Ignore jammed IP

Setting	Factory Default	Necessity
No or Yes	No	Optional

Previously, when Max connections > 1, and the serial device is transmitting data, if any one of the connected hosts is not responding, it will wait until the data has been transmitted successfully before transmitting the second group of data to all hosts. Currently, if you select Yes for "Ignore jammed IP," the host that is not responding will be ignored, but the data will still be transmitted to the other hosts.

Allow driver control

Setting	Factory Default	Necessity
No or Yes	No	Optional

If "max connection" is greater than 1, NPort will ignore driver control commands from all connected hosts. However, if you set "Allow driver control" to YES, control commands will be accepted. Note that since NPort IA may get configuration changes from multiple hosts, the most recent command received will take precedence.

Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0, The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the NPort IA5250I/5250I-T receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort IA5250I/5250I-T's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort IA5250I/5250I-T will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing Delimiter + 1 Delimiter + 2 Strip Delimiter	Do Nothing	Optional

[Delimiter + 1] or [Delimiter + 2]: The data will be transmitted when an additional byte (for Delimiter +1), or an additional 2 bytes (for Delimiter +2) of data is received after receiving the Delimiter.

[Strip Delimiter]: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

[Do nothing]: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort IA5250I/5250I-T's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

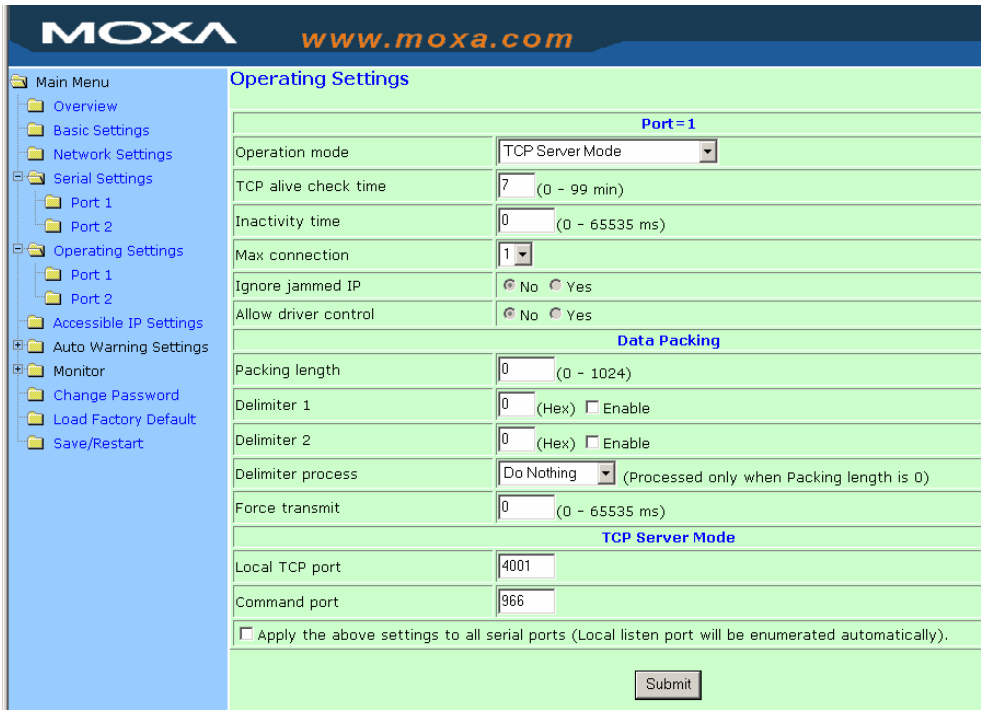
This parameter defines the time interval during which NPort IA5250I/5250I-T fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort IA5250I/5250I-T stores the data in the internal buffer. NPort IA5250I/5250I-T transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms. If the user wants to send a series of characters in the same packet, the serial device attached to NPort IA5250I/5250I-T should send that series of characters during a time interval less than the Force transmit timeout for NPort IA5250I/5250I-T, and the total length of data must be less than or equal to NPort IA5250I/5250I-T's internal buffer size. The serial communication buffer size for NPort IA5250I/5250I-T is 1 KB per port.

TCP Server Mode



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort IA5250I/5250I-T automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, NPort IA5250I/5250I-T starts listening for another host's TCP connection.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: NPort IA5250I/5250I-T automatically closes the TCP connection if there is no serial data activity for the given time. After the connection is closed, NPort IA5250I/5250I-T starts listening for another host's TCP connection.

This parameter defines the maintenance status as Closed or Listen for the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the Inactivity time is set to 0, the current TCP connection is kept active until a connection close request is received. Although Inactivity time is disabled, the NPort IA5250I/5250I-T will check the connection status between the NPort IA5250I/5250I-T and remote host by sending "keep alive" packets periodically. If the remote host does not respond to the packet, NPort IA5250I/5250I-T assumes that the connection was closed down unintentionally. NPort IA5250I/5250I-T will then force the existing TCP connection to close.

ATTENTION

The Inactivity time should at least be set larger than that of Force transmit timeout. To prevent the unintended loss of data due to the session being disconnected, it is highly recommended that this value is set large enough so that the intended data transfer is completed.

Max Connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max Connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default only allows 1 connection at a time.

Max. Connection 1:
NPort IA5250I/5250I-T only allows 1 host to open the TCP connection to the specific serial port.

Max Connection 2 to 4:
Allows 2 to 4 host's TCP connection request to open this NPort IA5250I/5250I-T serial port, at the same time. When multiple hosts establish a TCP connection to the specific serial port at the same time, NPort IA5250I/5250I-T will duplicate the serial data and transmit to all of the hosts. Ethernet data is sent on a first-in-first-out basis to the serial port when data comes into NPort IA5250I/5250I-T from the Ethernet interface.

Ignore jammed IP

Setting	Factory Default	Necessity
No or Yes	No	Optional

Previously, when Max connections > 1, and the serial device is transmitting data, if any one of the connected hosts is not responding, it will wait until the data has been transmitted successfully before transmitting the second group of data to all hosts. Currently, if you select Yes for "Ignore jammed IP," the host that is not responding will be ignored, but the data will still be transmitted to the other hosts.

Allow driver control

Setting	Factory Default	Necessity
No or Yes	No	Optional

If "max connection" is greater than 1, the NPort will ignore driver control commands from all connected hosts. However, if you set "Allow driver control" to YES, control commands will be accepted. Note that since the NPort IA5250I/5250I-T may get configuration changes from multiple hosts, the most recent command received will take precedence.

Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0, The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the NPort IA5250I/5250I-T receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort IA5250I/5250I-T's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort IA5250I/5250I-T will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing Delimiter + 1 Delimiter + 2 Strip Delimiter	Do Nothing	Optional

[Delimiter + 1] or [Delimiter + 2]: The data will be transmitted when an additional byte (for Delimiter +1), or an additional 2 bytes (for Delimiter +2) of data is received after receiving the Delimiter.

[Strip Delimiter]: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

[Do nothing]: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort IA5250I/5250I-T's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort IA5250I/5250I-T fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort IA5250I/5250I-T stores the data in the internal buffer. NPort IA5250I/5250I-T transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no for parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If the user wants to send a series of characters in the same packet, the serial device attached to NPort IA5250I/5250I-T should send that series of characters during a time interval less than the Force transmit timeout for NPort IA5250I/5250I-T, and the total length of data must be less than or equal to NPort IA5250I/5250I-T's internal buffer size. The serial communication buffer size for NPort IA5250I/5250I-T is 1 KB per port.

Local TCP port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

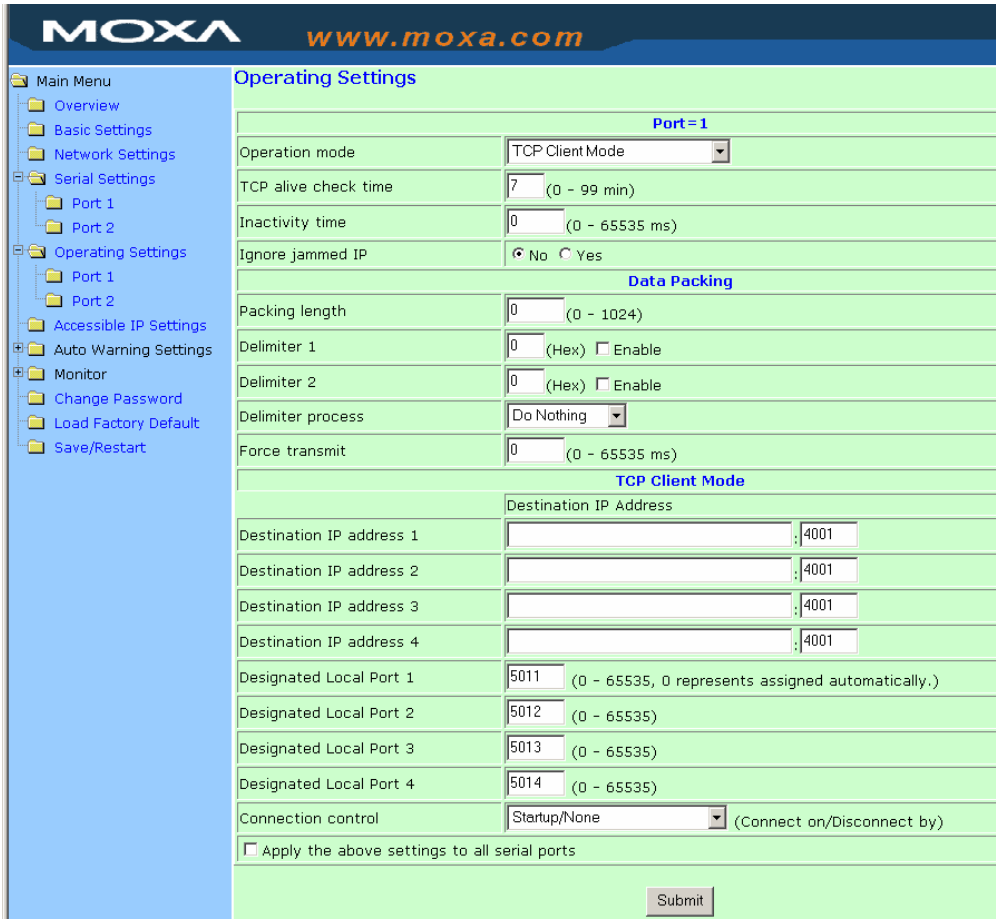
The"Local TCP port" is the TCP port that NPort IA5250I/5250I-T uses to listen to connections, and that other devices must use to contact NPort IA5250I/5250I-T. To avoid conflicts with well know TCP ports, the default is set to 4001.

Command port

Setting	Factory Default	Necessity
1 to 65535	966	Optional

The "Command port" is a listen TCP port for IP-Serial Lib commands from the host. In order to prevent a TCP port conflict with other applications, the user can set the Command port to another port if needed. IP-Serial Lib will automatically check the Command Port on NPort IA5250I/5250I-T so that the user does not need to configure the program.

TCP Client Mode



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: NPort IA5250I/5250I-T automatically closes the TCP connection if there is no TCP activity for the given time.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: NPort IA5250I/5250I-T automatically closes TCP connection, if there is no serial data activity for the given time.

This parameter defines the maintenances status as Closed or Listen on the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the value of inactivity time is set to 0, the current TCP connection is maintained until there's connection close request. Although the inactivity time is disabled, the NPort IA 5250I/5250I-T will check the connection status between the NPort IA5250I/5250I-T and remote host by sending "keep alive" packets periodically. If the remote host does not respond to the packets, it treats the connection as being down unintentionally. NPort IA5250I/5250I-T will then force the existing TCP connection to close.

ATTENTION

The Inactivity time should at least be set larger than that of Force transmit timeout. To prevent the unintended loss of data due to the session being disconnected, it is highly recommended that this value is set large enough so that the intended data transfer is completed.

ATTENTION

Inactivity time is ONLY active when "TCP connect on" is set to "Any character".

Ignore jammed IP

Setting	Factory Default	Necessity
No or Yes	No	Optional

Previously, when Max connections > 1, and the serial device is transmitting data, if any one of the connected hosts is not responding, it will wait until the data has been transmitted successfully before transmitting the second group of data to all hosts. Currently, if you select "Yes" for "Ignore jammed IP," the host that is not responding will be ignored, but the data will still be transmitted to the other hosts.

Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0, The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the NPort IA5250I/5250I-T receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort IA5250I/5250I-T Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort IA5250I/5250I-T will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing Delimiter + 1 Delimiter + 2 Strip Delimiter	Do Nothing	Optional

[Delimiter + 1] or [Delimiter + 2]: The data will be transmitted when an additional byte (for Delimiter +1), or an additional 2 bytes (for Delimiter +2) of data is received after receiving the Delimiter.

[Strip Delimiter]: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

[Do nothing]: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort IA5250I/5250I-T's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort IA5250I/5250I-T fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort IA5250I/5250I-T stores the data in the internal buffer. NPort IA5250I/5250I-T transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If the user wants to send a series of characters in the same packet, the serial device attached to NPort IA5250I/5250I-T should send that series of characters during a time interval less than the Force transmit timeout for NPort IA5250I/5250I-T, and the total length of data must be less than or equal to NPort IA5250I/5250I-T's internal buffer size. The serial communication buffer size for NPort IA5250I/5250I-T is 1 KB per port.

Destination IP address 1

Setting	Factory Default	Necessity
IP address or Domain Address (E.g., 192.168.1.1)	None	Required

Allows the NPort IA5250I/5250I-T to connect actively to the remote host whose address is set by this parameter.

Destination IP address 2/3/4

Setting	Factory Default	Necessity
IP address or Domain Address (E.g., 192.168.1.1)	None	Required

Allows the NPort IA5250I/5250I-T to connect actively to the remote host whose address is set by this parameter.

ATTENTION

Up to 4 connections can be established between the NPort IA5250I/5250I-T and hosts. The connection speed or throughput may be low if one of the four connections is slow, since the slow connection will slow down the other 3 connections.

ATTENTION

The "Destination IP address" parameter can use both IP address and Domain Name. For some applications, the user may need to send the data actively to the remote destination domain name.

Designated Local Port 1/2/3/4

Setting	Factory Default	Necessity
TCP Port No.	5011 *(Port 1)* 5012 *(Port 2)* 5013 *(Port 3)* 5014 *(Port 4)*	Required

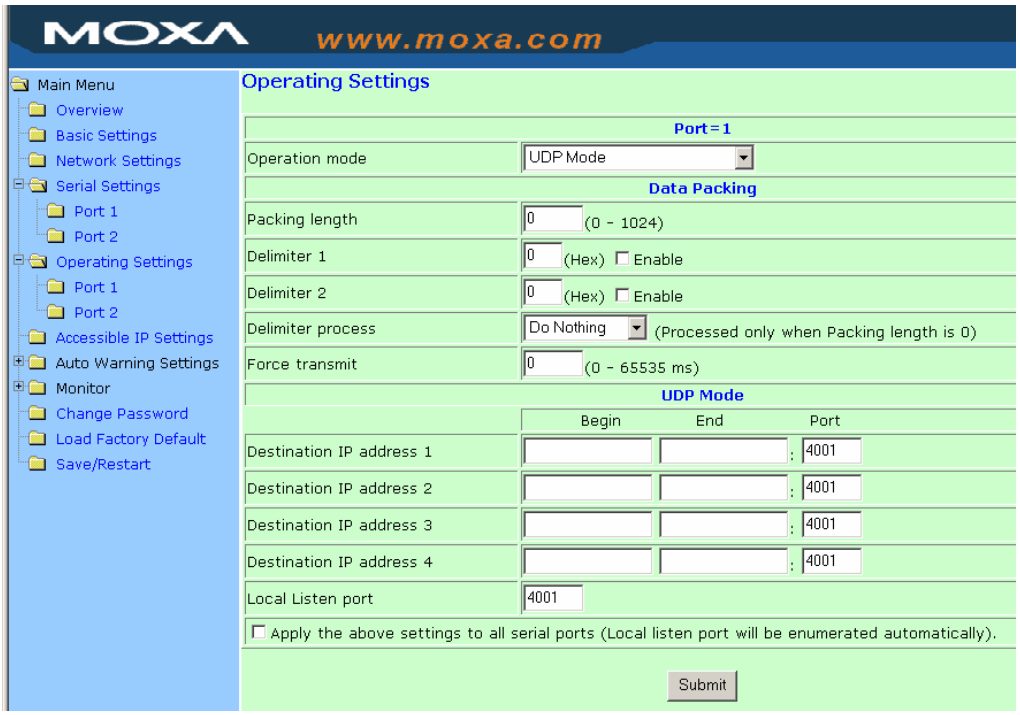
Connection control

Setting	Factory Default	Necessity
Startup/None, Any Character/None, Any Character/Inactivity Time, DSR ON/DSR OFF, DSR ON/None, DCD ON/DCD OFF, DCD ON/None	Startup/None	Required

The meaning of each of the above settings is given in the table below. In general, both the Connect condition and Disconnect condition are given.

Connect/Disconnect	Description
Startup/None (default)	A TCP connection will be established on startup, and will remain active indefinitely.
Any Character/None	A TCP connection will be established when any character is received from the serial interface, and will remain active indefinitely.
Any Character/ Inactivity Time	A TCP connection will be established when any character is received from the serial interface, and will be disconnected when the Inactivity time out is reached.
DSR On/DSR Off	A TCP connection will be established when a DSR "On" signal is received, and will be disconnected when a DSR "Off" signal is received.
DSR On/None	A TCP connection will be established when a DSR "On" signal is received, and will remain active indefinitely.
DCD On/DCD Off	A TCP connection will be established when a DCD "On" signal is received, and will be disconnected when a DCD "Off" signal is received.
DCD On/None	A TCP connection will be established when a DCD "On" signal is received, and will remain active indefinitely.

UDP Mode



Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0, The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the NPort IA5250I/5250I-T receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the NPort IA5250I/5250I-T's Ethernet port.

ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the NPort IA5250I/5250I-T will automatically pack the data and send it to the Ethernet. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing Delimiter + 1 Delimiter + 2 Strip Delimiter	Do Nothing	Optional

[Delimiter + 1] or [Delimiter + 2]: The data will be transmitted when an additional byte (for Delimiter +1), or an additional 2 bytes (for Delimiter +2) of data is received after receiving the Delimiter.

[Strip Delimiter]: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

[Do nothing]: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disable the force transmit timeout.

1 to 65535: Forces the NPort IA5250I/5250I-T's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which NPort IA5250I/5250I-T fetches the serial data from its internal buffer. If data is incoming through the serial port, NPort IA5250I/5250I-T stores the data in the internal buffer. NPort IA5250I/5250I-T transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the Force transmit time interval reaches the time specified under Force transmit timeout.

The optimal Force transmit timeout depends on your application, but it must be at least larger than one character interval within the specified baud rate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits) / 1200 (bits/s)) * 1000 (ms/s) = 8.3 ms.

Therefore, you should set Force transmit timeout to be larger than 8.3 ms, so in this case, it must be greater than or equal to 10 ms.

If the user wants to send a series of characters in the same packet, the serial device attached to NPort IA5250I/5250I-T should send that series of characters during a time interval less than the Force transmit timeout for NPort IA5250I/5250I-T, and the total length of data must be less than or equal to NPort IA5250I/5250I-T's internal buffer size. The serial communication buffer size for NPort IA5250I/5250I-T is 1 KB per port.

Destination IP address 1

Setting	Factory Default	Necessity
IP address range E.g., Begin: 192.168.1.1 End: 192.168.1.10	Begin: Empty End: Empty Port: 4001	Required

Destination IP address 2/3/4

Setting	Factory Default	Necessity
IP address range E.g., Begin: 192.168.1.11 End: 192.168.1.20	Begin: Empty End: Empty Port: 4001	Optional

Local listen port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

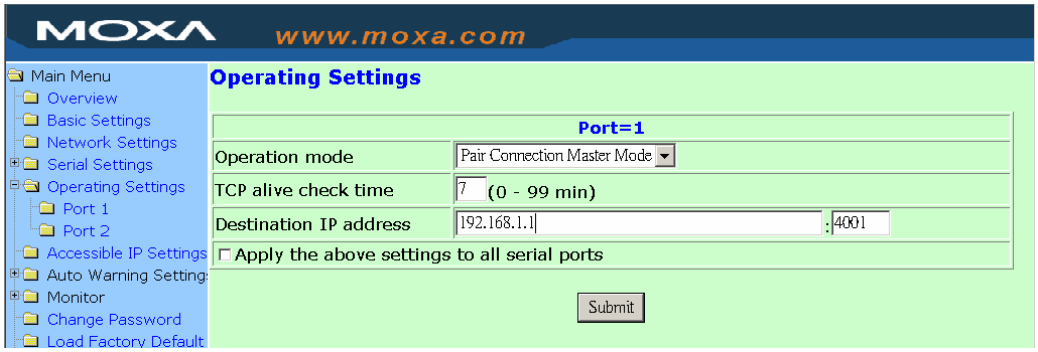
The UDP port that NPort IA5250I/5250I-T listens to, and that other devices must use to contact NPort IA5250I/5250I-T. To avoid conflicts with well known UDP ports, the default is set to 4001.

Pair Connection Mode

Pair Connection Mode employs two NPort IA5250I/5250I-T device servers in tandem, and can be used to remove the 15-meter distance limitation imposed by the RS-232 interface. One NPort IA5250I/5250I-T is connected from its RS-232 port to the COM port of a PC or other type of computer, such as hand-held PDAs that have a serial port, and the serial device is connected to the RS-232 port of the other NPort IA5250I/5250I-T. The two NPort IA5250I/5250I-T device servers are then connected to each other with a cross-over Ethernet cable, both are connected to the same LAN, or in a more advanced setup, they communicate with each other over a WAN (i.e., through one or more routers). Pair Connection Mode transparently transfers both data and modem control signals (although it cannot transmit the DCD signal) between the two NPorts.

Pair Connection Master Mode

When using Pair Connection Mode, you must select **Pair Connection Master Mode** for the Operation mode of one of the NPort IA5250I/5250I-T device servers. In effect, this NPort IA5250I/5250I-T will be acting as a TCP client.



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Required

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: The NPort IA5250I/5250I-T closes the TCP connection automatically if there is no TCP activity for the given time.

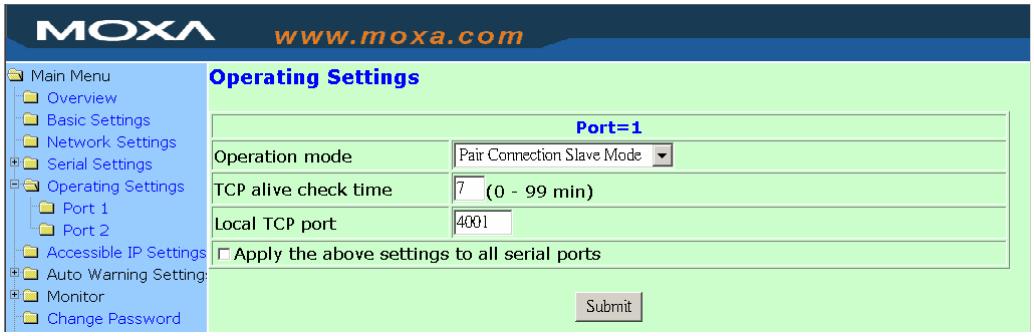
Destination IP address

Setting	Factory Default	Necessity
IP address or Domain Name (E.g., 192.168.1.1)	*blank*	Optional
TCP port No.	4001	Required

The Pair Connection "Master" will contact the network host that has this IP address. Data will be transmitted through the port No. (4001 by default). Note that you must configure the same TCP port No. for the device server acting as the Pair Connection "Slave."

Pair Connection Slave Mode

When using Pair Connection Mode, you must select **Pair Connection Slave Mode** for the Operation mode of one of the NPort IA5250I/5250I-T device servers. In effect, this NPort IA5250I/5250I-T will be acting as a TCP server.



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Required

0 min: TCP connection is not closed due to an idle TCP connection.

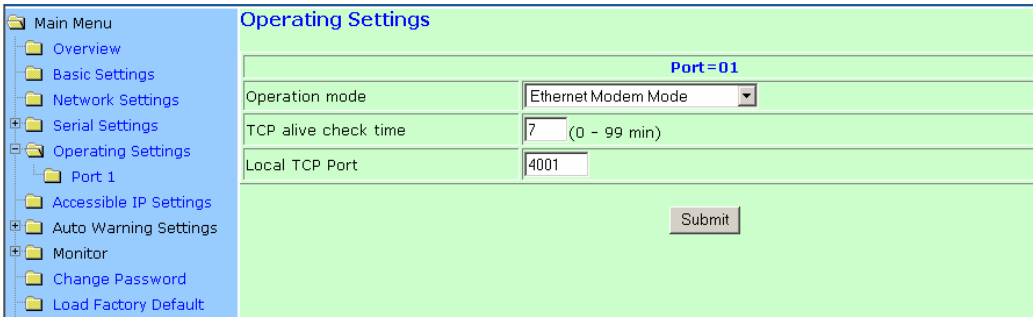
1 to 99 min: The NPort IA5250I/5250I-T closes the TCP connection automatically if there is no TCP activity for the given time.

Local TCP port

Setting	Factory Default	Necessity
TCP port No. (e.g., 4001)	4001	Required

This Port No. must be the same port No. that you set up for the Pair Connection "Master" device server.

Ethernet Modem Mode



Dial-in

NPort IA5250I/5250I-T listens for a TCP/IP connection request from the remote Ethernet modem or host. NPort IA5250I/5250I-T's response depends on the ATS0 value, as outlined below.

ATS0=0 (default):

NPort IA5250I/5250I-T will temporarily accept the TCP connection and then send the "RING" signal out through the serial port. The serial controller must reply with "ATA" within 2.5 seconds to accept the connection request, after which NPort IA5250I/5250I-T enters data mode. If no "ATA" command is received,

NPort IA5250I/5250I-T will disconnect after sending three "RING" signals.

ATS0≧1:

NPort IA5250I/5250I-T will accept the TCP connection immediately and then send the "CONNECT

<baud>" command to the serial port, in which <baud> represents the baud rate of NPort IA5250I/5250I-T's serial port. After that, NPort IA5250I/5250I-T immediately enters data mode.

Dial-out

NPort IA5250I/5250I-T accepts the AT command "ATD <IP>:<TCP port>" from the serial port and then requests a TCP connection from the remote Ethernet Modem or PC. This is where <IP> is the IP address of the remote Ethernet modem or PC, and <TCP port> is the TCP port number of the remote Ethernet modem or PC. Once the remote unit accepts this TCP connection, NPort IA5250I/5250I-T will send out the "CONNECT <baud>" signal via the serial port and then enter data mode.

Disconnection request from local site

When NPort IA5250I/5250I-Ts is in data mode, the user can drive the DTR signal to OFF, or send "+++" from the local serial port to NPort IA5250I/5250I-T. NPort IA5250I/5250I-T will enter command mode and return "NO CARRIER" via the serial port, and then input "ATH" to shut down the TCP connection after 1 second.

ATTENTION

The "+++" command cannot be divided. The "+" character can be changed in register S2, and the guard time, which prefixes and suffixes the "+++" in order to protect the raw data, can be changed in register S12.

Disconnection request from remote site

After the TCP connection has been shut down by the remote Ethernet modem or PC, NPort IA5250I/5250I-T will send the "NO CARRIER" signal via the serial port and then return to command mode.

The following tables give the additional parameters that can be configured for TCP Client Mode. Refer to the table below the figures to see details of the meaning of each parameter.

Ethernet Modem			
Setting	**Value**	**Notes**	**Necessity**
TCP port	Valid port No.	The TCP port that other devices must use to contact this device. To avoid conflicts with standard TCP ports, the default is set to 4001.	Required
TCP alive check time	0	TCP connection is not closed due to an idle serial line.	Optional
	1 to 99 min.	TCP connection is automatically closed by this device if there is no TCP activity for the given time.	

AT Commands

NPort IA5250I/5250I-T supports the following common AT commands used with a typical modem:

No.	AT command	Description	Remarks
1	ATA	Answer manully	
2	ATD<IP>:<Port>	Dial up the IP address: Port No.	
3	ATE	ATE0=Echo OFF ATE1=Echo ON (default)	
4	ATH	ATH0=On-hook (default) ATH1=Off-hook	
5	ATI, ATI0, ATI1, ATI2	Modem version	reply "OK" only
6	ATL	Speaker volume option	reply "OK" only
7	ATM	Speaker control option	reply "OK" only
8	ATO	On line command	
9	ATP, ATT	Set Pulse/Tone Dialing mode	reply "OK" only
10	ATQ0, ATQ1	Quiet command (default=ATQ0)	
11	ATSr=n	Change the contents of S register	See "S registers"
12	ATSr?	Read the contents of S register	See "S registers"
13	ATV	Result code type ATV0 for digit code, ATV1 for text code 0=OK 1=connect (default) 2=ring 3=No carrier 4=error	
14	ATZ	Reset (disconnect, enter command mode and restore the flash settings)	
15	AT&C	Serial port DCD control AT&C0=DCD always on AT&C1=DTE detects connection by DCD on/off (default)	
16	AT&D	Serial port DTR control AT&D0=recognize DTE always Ready AT&D1, AT&D2=reply DTE when DTR On (default)	
17	AT&F	Restore manufacturer's settings	
18	AT&G	Select guard time	reply "OK" only
19	AT&R	Serial port RTS option command	reply "OK" only
20	AT&S	Serial port DSR control	reply "OK" only
21	AT&V	View settings	
22	AT&W	Write current settings to flash for next boot up	

S Registers

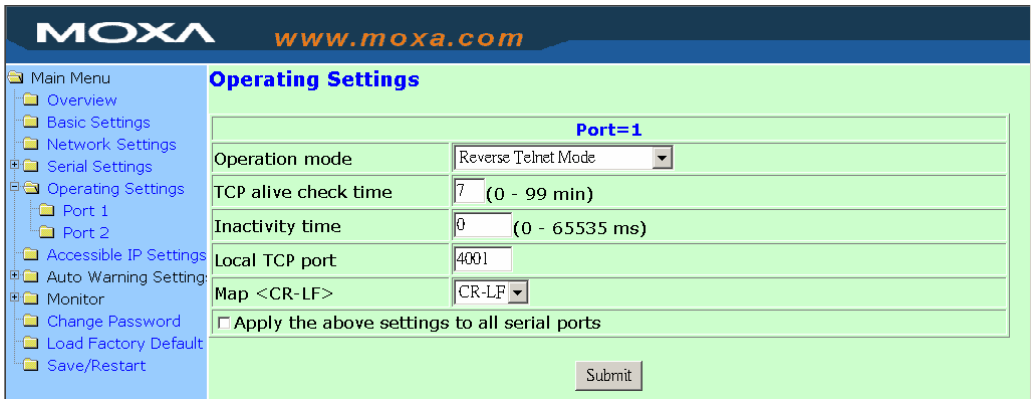
No.	AT command	Description	Remarks
1	S0	Ring to auto-answer (default=0)	
2	S1	Ring counter (always=0)	No action applied
3	S2	Escape code character (default=43 ASCII "+")	
4	S3	Return character (default=13 ASCII)	
5	S4	Line feed character (default=10 ASCII)	
6	S5	Backspace character (default= 8 ASCII)	
7	S6	Wait time for dial tone (always=2, unit=sec)	No action applied
8	S7	Wait time for carrier (default=3, unit=sec)	
9	S8	Pause time for dial delay (always=2, unit=sec)	No action applied
10	S9	Carrier detect response time (always=6, unit 1/10 sec)	No action applied
11	S10	Delay for hang up after carrier (always=14, unit 1/10 sec)	No action applied
12	S11	DTMF duration and spacing (always=100 ms)	No action applied
13	S12	Escape code guard time (default=50, unit 1/50 sec) to control the idle time for "+++"	

Local TCP port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

The TCP port that other devices must use to contact this device. To avoid conflicts with standard TCP ports, the default is set to 4001.

Reverse Telnet Mode



TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	0	Optional

Specifies the time slice for checking if the TCP connection is alive. If no response, NPort IA5250I/5250I-T will disconnect the original connection.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0	Optional

Idle time setting for auto-disconnection. 0 min. means it will never disconnect.

Local TCP port

Setting	Factory Default	Necessity
1 to 65535	4001	Optional

Each of the NPort IA's serial ports is mapped to a TCP port. To avoid conflicts with TCP ports, set port numbers to 4001 for port1, 4002 for port 2, etc. (like the default values).

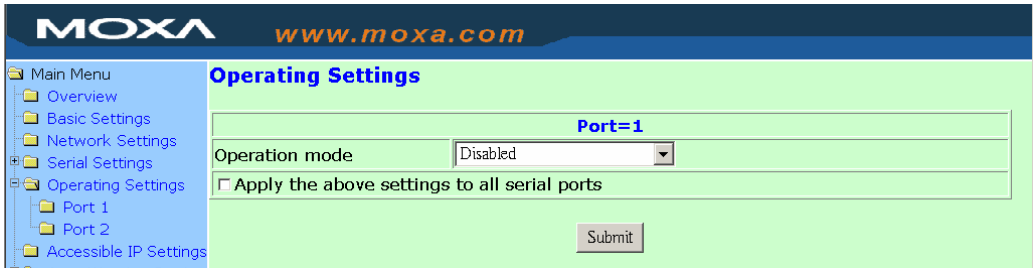
Map <CR-LF>

Setting	Factory Default	Necessity
CR, LF, or CR-LF	CR-LF	Optional

If data received through the NPort IA5250I/5250I-T's Ethernet port is sent using the "enter" command, the data will be transmitted out the serial port with an added

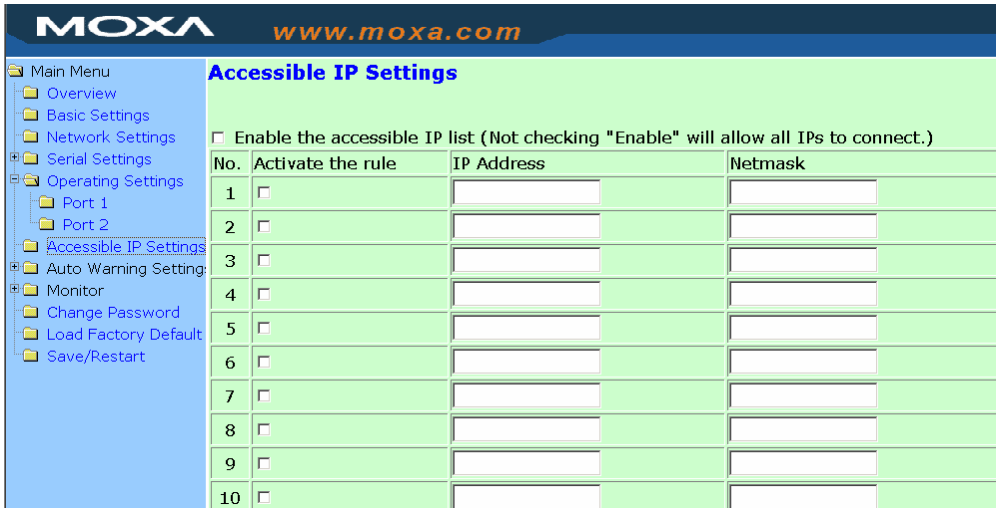
1. "carriage return + line feed" if you select the <CR-LF> option
   (i.e., the cursor will jump to the next line, and return to the first character of the line)
2. "carriage return" if you select the <CR> option
   (i.e., the cursor will return to the first character of the line)
3. "line feed" if you select the <LF> option.
   (i.e., the cursor will jump to the next line, but not move horizontally)

Disabled Mode



When Operation mode is set to Disabled, that particular port will be disabled. Check the "Apply the above settings to all serial ports" to apply this setting to the other port.

Accessible IP Settings



NPort IA5250I/5250I-T uses an IP address based filtering method to control access to itself.

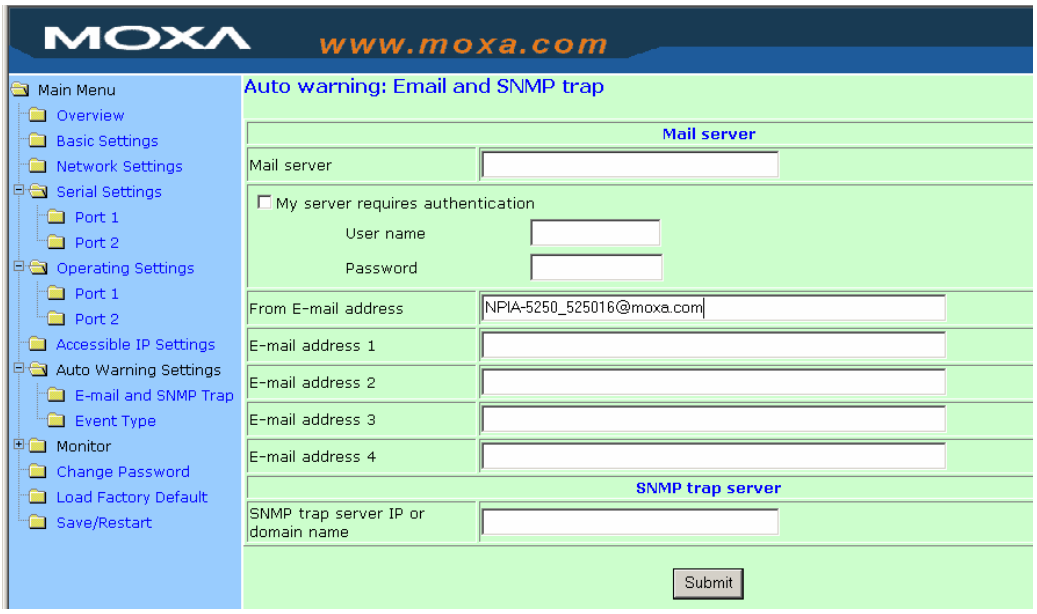
Accessible IP Settings allows you to add or block remote host IP addresses to prevent unauthorized access. Access to NPort IA5250I/5250I-T is controlled by IP address. That is, if a host's IP address is in the accessible IP table, then the host will be allowed to access the NPort IA5250I/5250I-T. You can allow one of the following cases by setting the parameter.

- **Only one host of specific IP address can access the NPort IA5250I/5250I-T**
  Enter "IP address/255.255.255.255" (e.g., "192.168.1.1/255.255.255.255").
- **Hosts on the specific subnet can access the NPort IA5250I/5250I-T**
  Enter "IP address/255.255.255.0" (e.g., "192.168.1.0/255.255.255.0").
- **Any host can access the NPort IA5250I/5250I-T**
  Disable this function. Refer to the following table for more details about the configuration example.

Allowable Hosts	Input format
Any host	Disable
192.168.1.120	192.168.1.120 / 255.255.255.255
192.168.1.1 to 192.168.1.254	192.168.1.0 / 255.255.255.0
192.168.0.1 to 192.168.255.254	192.168.0.0 / 255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0 / 255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128 / 255.255.255.128

Auto Warning Settings

Auto warning: E-mail and SNMP trap



Mail Server

Mail server

Setting	Factory Default	Necessity
IP or Domain Name	None	Optional

User name

Setting	Factory Default	Necessity
1 to 15 characters	None	Optional

Password

Setting	Factory Default	Necessity
1 to 15 characters	None	Optional

From E-mail address

Setting	Factory Default	Necessity
1 to 63 characters	None	Optional

E-mail address 1/2/3/4

Setting	Factory Default	Necessity
1 to 63 characters	None	Optional

ATTENTION

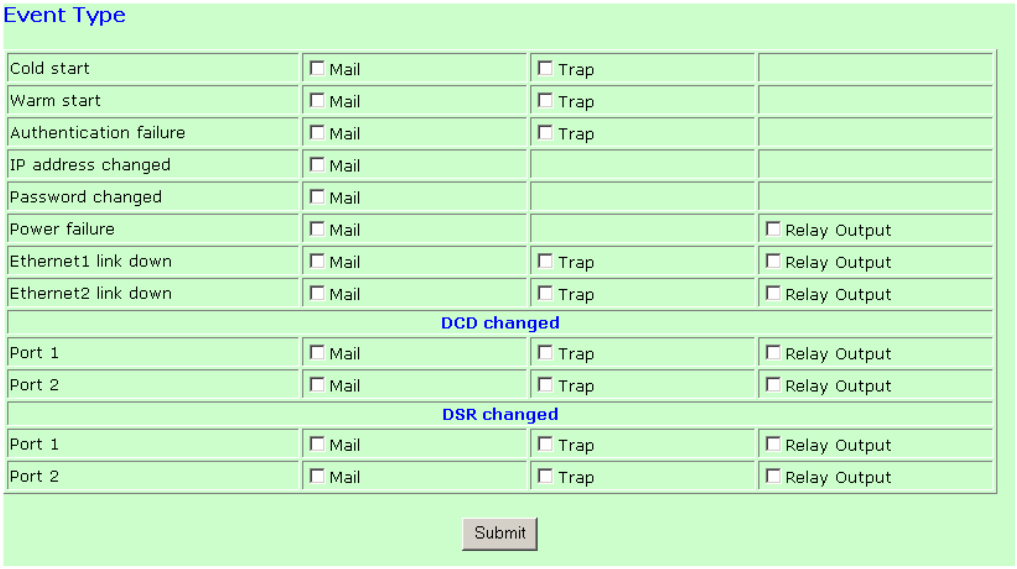
Consult your Network Administrator or ISP for the proper mail server settings. The Auto warning function may not work properly if it is not configured correctly. NPort IA5250I/5250I-T SMTP AUTH supports LOGIN, PLAIN, CRAM-MD5 (RFC 2554).

SNMP Trap Server

SNMP trap server IP or domain name

Setting	Factory Default	Necessity
IP address or Domain Name	None	Optional

Event Type



Cold start
This refers to starting the system from power off (contrast this with warm start). When performing a cold start, the NPort IA5250I/5250I-T will automatically issue an Auto warning message by e-mail, or send an SNMP trap after rebooting.

Warm start
This refers to restarting the computer without turning the power off. It's the opposite of cold start. When performing a warm start, the NPort IA5250I/5250I-T will automatically send an e-mail, or send an SNMP trap after rebooting.

Authentication failure
The user inputs a wrong password from the Console or Administrator. When authentication failure occurs, the NPort IA5250I/5250I-T will immediately send an e-mail or send an SNMP trap.

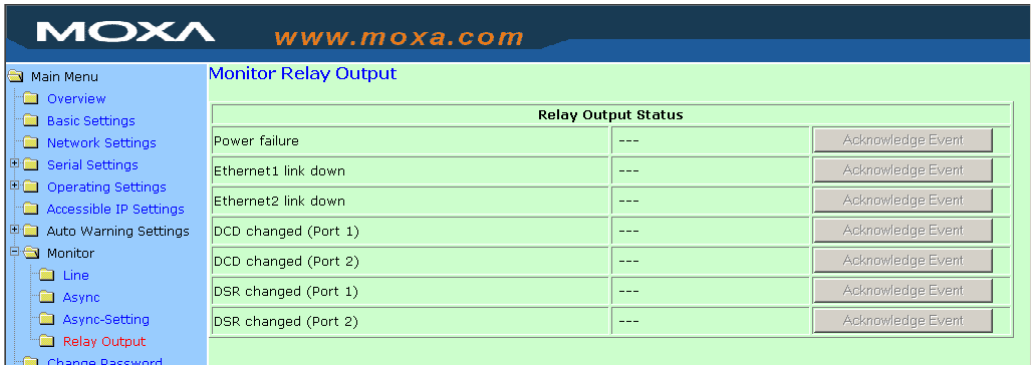
IP address changed
The user has changed the NPort IA5250I/5250I-T's IP address. When the IP address changes, the NPort IA5250I/5250I-T will send an e-mail with the new IP address before the NPort IA150/5250 reboots. If the NPort IA5250I/5250I-T fails to send mail to the mail server after 15 seconds, the NPort IA5250I/5250I-T will be rebooting directly and abort the mail auto warning.

Password changed
The user has changed the NPort IA5250I/5250I-T's password. When the password changes, the NPort IA5250I/5250I-T will send an e-mail with the password change notice before the NPort IA5250I/5250I-T reboots. If the NPort IA5250I/5250I-T fails to send mail to the mail server after 15 seconds, the NPort IA5250I/5250I-T will be rebooting directly and abort the mail auto warning.

Power failure

We provide two DC power inputs for redundancy. NPort IA supports different approaches to warn engineers automatically, such as by email or relay output (which closes the circuit). Users can connect to **Monitor → Relay Output** from the web console to check what event causes the warning. The relay output will be canceled after the power recovers, or by selecting "acknowledge event" using the web console or Telnet.

When the Relay Output is sending a warning, the Ready LED will flash red until the warning event ceases.



Ethernet1 link down

NPort IA can provide system maintainers with real-time alarm messages. Even when control engineers are out of the control room for an extended period of time, they can still be informed of the status of devices almost instantaneously when exceptions occur. NPort IA supports different methods for warning engineers automatically, such as by email, SNMP trap, and relay output (which closes the circuit). Users can connect to **Monitor → Relay Output** from the web console to check which event is causing the warning. The relay output will be canceled if Ethernet link 1 is restored, or by selecting "acknowledge event" from the web console or Telnet.

When the **Relay Output** is issuing a warning, the Ready LED will flash in red until the warning event ceases.

Ethernet2 link down

NPort IA can provide system maintainers with real-time alarm messages. Even when control engineers are out of the control room for an extended period of time, they can still be informed of the status of devices almost instantaneously when exceptions occur. NPort IA supports different methods for warning engineers automatically, such as by email, SNMP trap, and relay output (which closes the circuit). Users can connect to **Monitor → Relay Output** from the web console to check which event is causing the warning. The relay output will be canceled if Ethernet link 2 is restored, or by selecting "acknowledge event" from the web console or Telnet.

When the **Relay Output** is issuing a warning, the Ready LED will flash in red until the warning event ceases.

DCD changed

A change in the DCD (Data Carrier Detect) signal indicates that the modem connection status has changed. For example, If the DCD signal changes to low, it means that the connection line is down.

When the DCD signal changes to low, NPort IA will immediately send a warning. NPort IA supports different approaches to warn engineers automatically, such as by email, SNMP trap, and relay output (which closes the circuit). Users can connect to **Monitor → Relay Output** from the web console to check what event caused the warning. You can cancel the relay output status by changing the DCD signal changing to high, or by selecting "acknowledge event" from the web console or Telnet.

When the **Relay Output** is issuing a warning, the Ready LED will flash in red until the warning event ceases.

DSR changed

A change in the DSR (Data Carrier Detect) signal indicates that the data communication equipment is powered off. For example, If the DSR signal changes to low, it means that the data communication equipment is powered down. When the DSR signal changes to low, NPort IA will immediately send a warning. NPort IA supports different approaches to warn engineers automatically, such as by email, SNMP trap, and relay output (which closes the circuit). Users can connect to **Monitor → Relay Output** from the web console to check what event caused the warning. You can cancel the relay output status by changing the DSR signal changing to high, or by selecting "acknowledge event" from the web console or Telnet.

When the **Relay Output** is issuing a warning, the Ready LED will flash in red until the warning event ceases.

Mail

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage how the NPort IA5250I/5250I-T sends e-mail to pre-defined e-mail boxes when the enabled events—such as Cold start, Warm start, Authentication failure, etc.—occur. To configure this feature, click on the Event Type Mail checkbox.

Trap

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage how the NPort IA5250I/5250I-T sends SNMP Trap to a pre-defined SNMP Trap server when the enabled events—such as Cold start, Warm start, Authentication failure, etc.—occur. To configure this feature, click on the Event Type Trap checkbox.

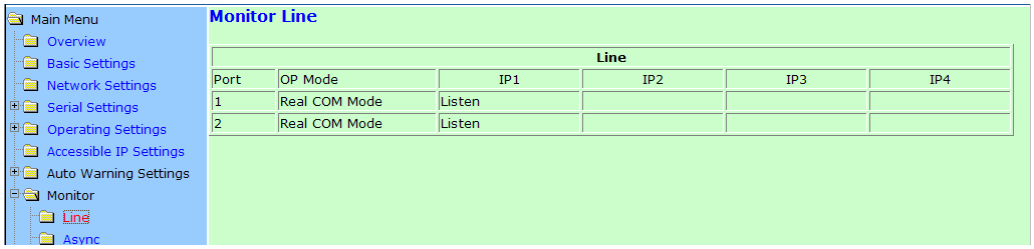
ATTENTION

SNMP can detect when DCD or DSR changes from "–" to "+" and when DCD or DSR changes from "+" to "–" but SNMP cannot detect whether it was the DCD signal that changed or the DSR signal that changed. For this reason, a change from "–" to "+" (of either DCD or DSR) is indicated by "link up" and a change from "+" to "–" (of either DCD or DSR) is indicated by "link down."

Monitor

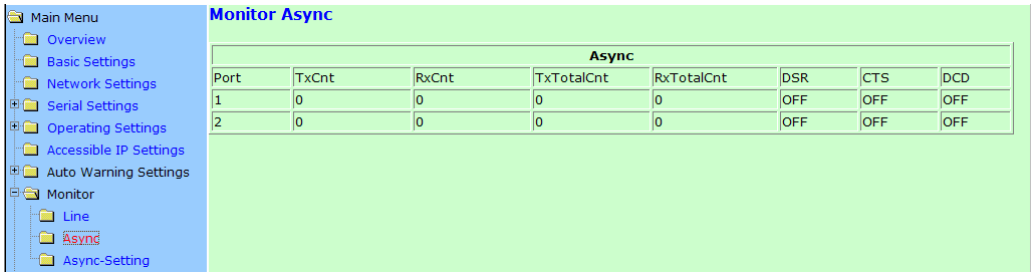
Monitor Line

Click on **Line** under **Monitor** to show the operation mode and status of each connection (IPx), for each of the four serial ports.



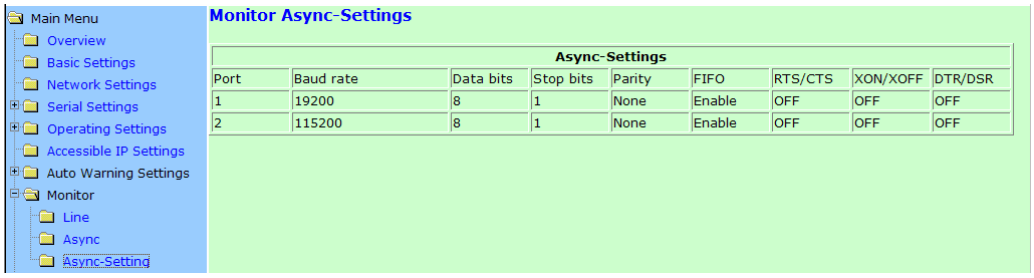
Monitor Async

Click on **Async** under **Monitor** to show the current status of each of the four serial ports.



Monitor Async-Settings

Click on **Async Setting** under **Monitor** to show the run-time settings for each of the four serial ports.

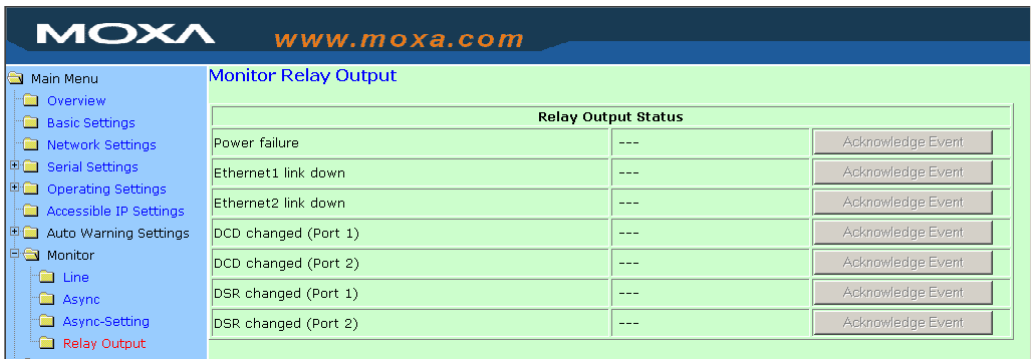


Async-Settings

Port	Baud rate	Data bits	Stop bits	Parity	FIFO	RTS/CTS	XON/XOFF	DTR/DSR
1	19200	8	1	None	Enable	OFF	OFF	OFF
2	115200	8	1	None	Enable	OFF	OFF	OFF

Monitor Relay Output

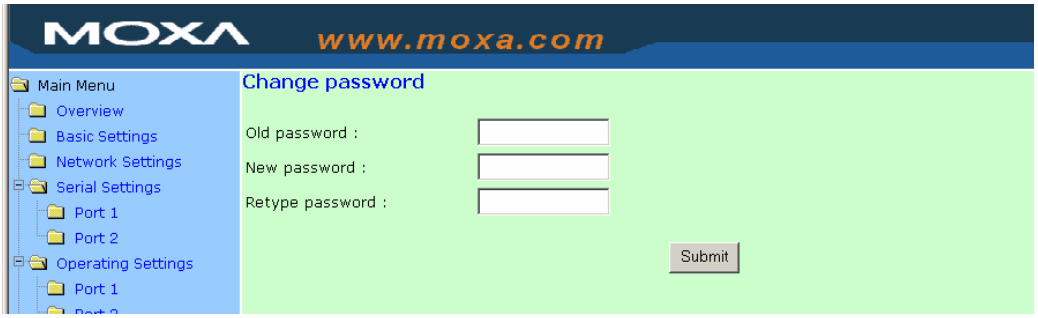
Click on **Relay Output** under **Monitor** to display the "Relay Output Status" for each of the report types (Power failure, Ethernet1 link down, etc.).



Relay Output Status

Power failure	---	Acknowledge Event
Ethernet1 link down	---	Acknowledge Event
Ethernet2 link down	---	Acknowledge Event
DCD changed (Port 1)	---	Acknowledge Event
DCD changed (Port 2)	---	Acknowledge Event
DSR changed (Port 1)	---	Acknowledge Event
DSR changed (Port 2)	---	Acknowledge Event

Change Password



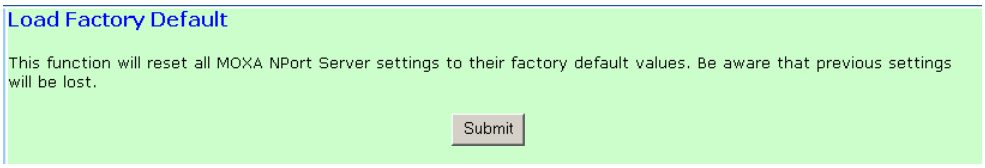
Input the "Old password" and "New password" to change the password. Leave the password boxes blank to erase the password. If the password is erased, then NPort IA5250I/5250I-T will not have password protection.

ATTENTION

If you forget the password, the ONLY way to configure NPort IA5250I/5250I-T is by using the Reset button on NPort IA5250I/5250I-T's casing to "Load Factory Default."

Remember to export the configuration file using NPort Administrator when you finish the configuration. By using the Import function of NPort Administrator, your configuration can be re-loaded into NPort IA5250I/5250I-T after using "Load Factory Default." Refer to Chapter 6 for more details about the Export and Import function.

Load Factory Default


Load Factory Default
This function will reset all MOXA NPort Server settings to their factory default values. Be aware that previous settings will be lost.
Submit

This function will reset all of the NPort IA5250I/5250I-T's settings to the factory default values. Be aware that previous settings will be lost.

6

Configuring NPort Administrator

The following topics are covered in this chapter:

- **Overview**
- **Installing NPort Administrator**
- **Configuration**
  - Broadcast Search
  - Unlock Password Protection
  - Configuring the NPort IA5250I/5250I-T
  - Upgrading the Firmware
  - Export Configuration
  - Import Configuration
- **Monitor**
- **Port Monitor**
- **COM Mapping**
  - On-line COM Mapping
  - Off-line COM Mapping
- **IP Address Report**

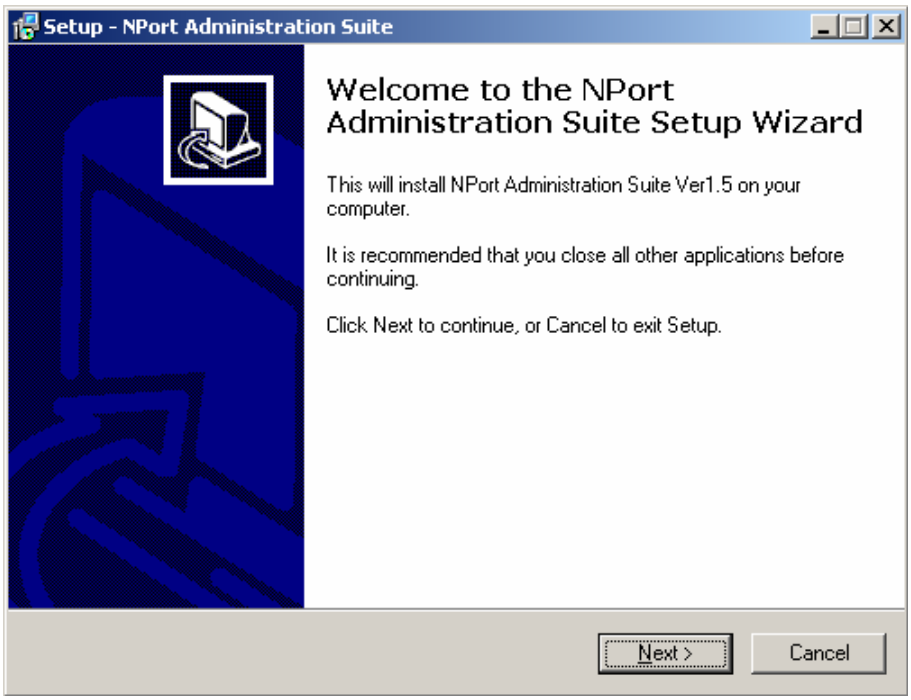
Overview

Device Server Administrator lets you install and configure your NPort IA5250I/5250I-T products easily over the network. Five function groups are provided to ease the installation process, allow off-line COM mapping, and provide monitoring and IP location server functions.

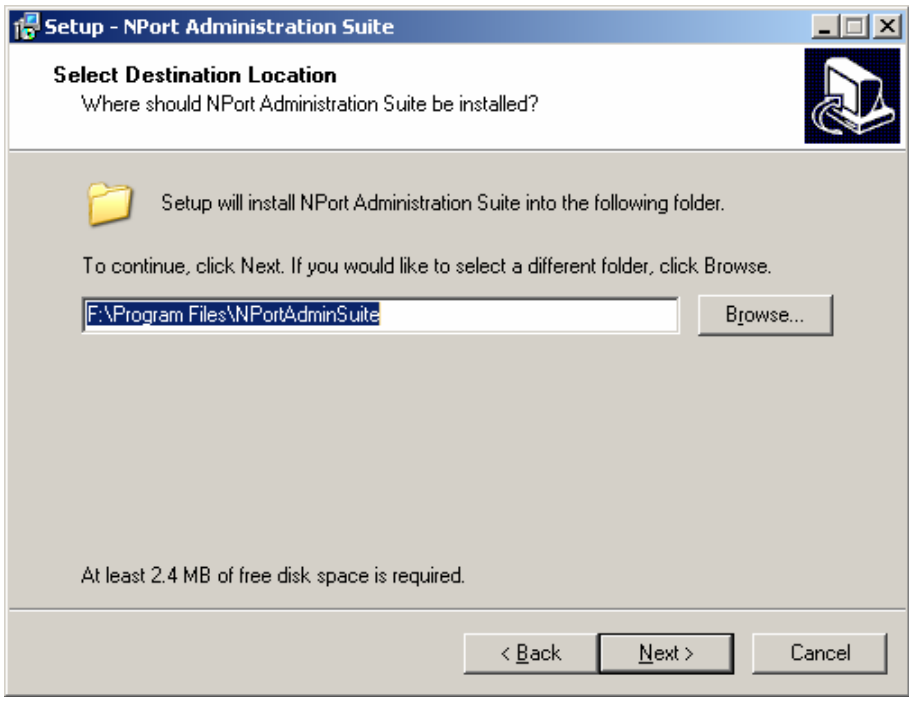
Device Server Administrator is an integrated software suite that bundles Device Server Administrator and the IP Serial Library, and provides everything you need to manage, monitor, and modify your NPort IA5250I/5250I-T from a remote location.

Installing NPort Administrator

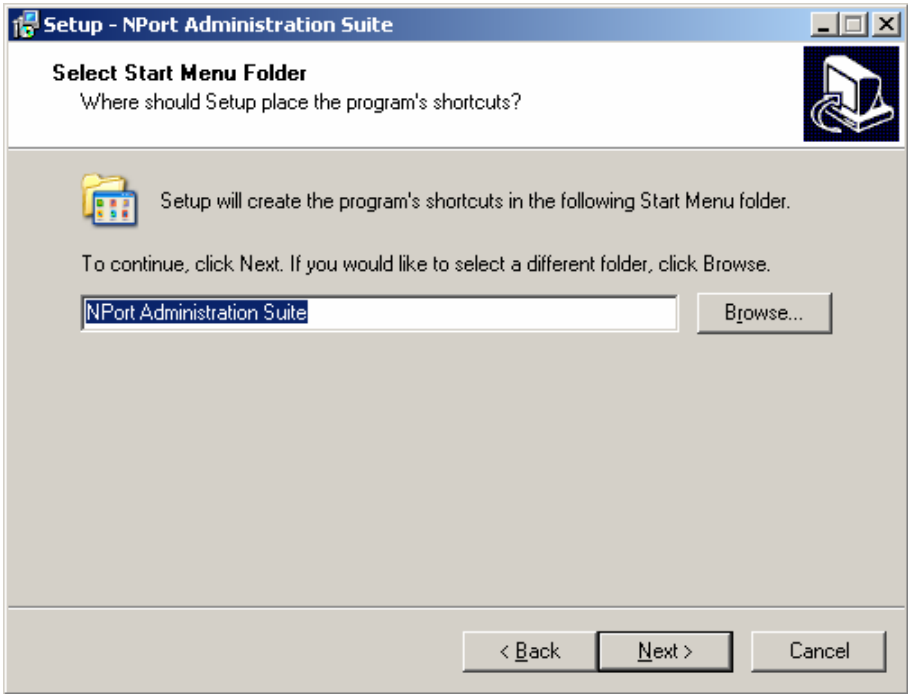
1. Once the Setup program starts running, click on **Next** when the **Welcome** window opens to proceed with the installation.


Setup - NPort Administration Suite
Welcome to the NPort Administration Suite Setup Wizard
This will install NPort Administration Suite Ver1.5 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

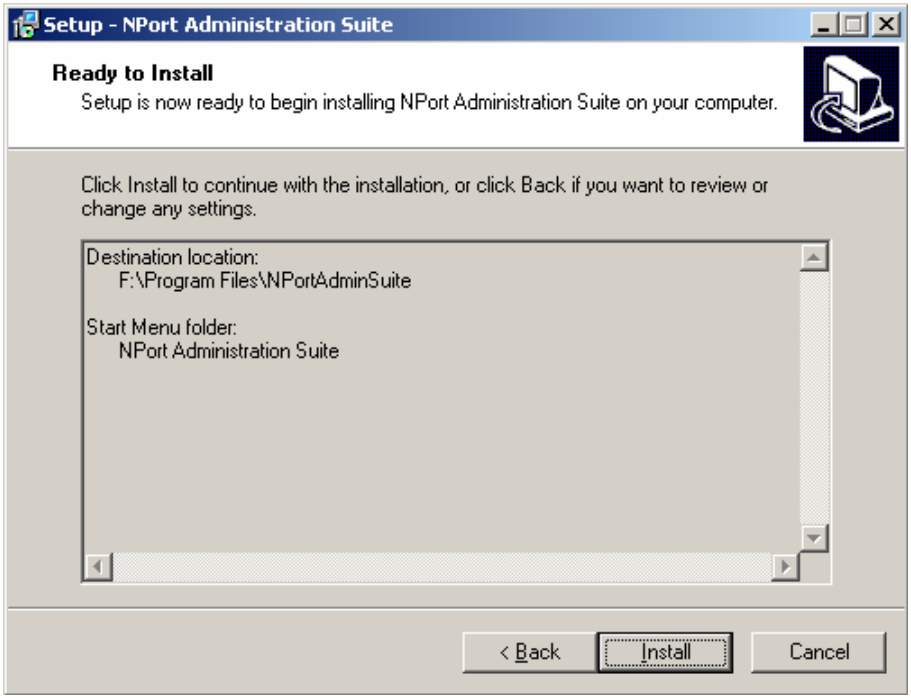
2. Click on **Next** to install program files in the default directory, or select an alternative location.


Setup - NPort Administration Suite
Select Destination Location
Where should NPort Administration Suite be installed?
Setup will install NPort Administration Suite into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
F:\Program Files\NPortAdminSuite
Browse...
At least 2.4 MB of free disk space is required.
< Back
Next >
Cancel

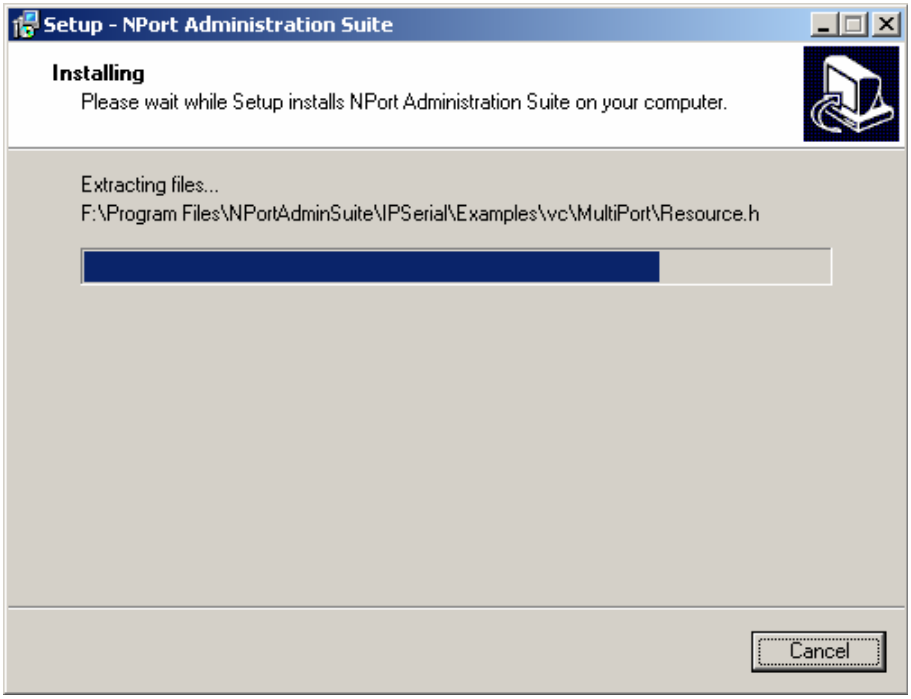
3. Click on **Next** to install the program using the default program name, or select a different name.


Setup - NPort Administration Suite
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
NPort Administration Suite
Browse...
< Back
Next >
Cancel

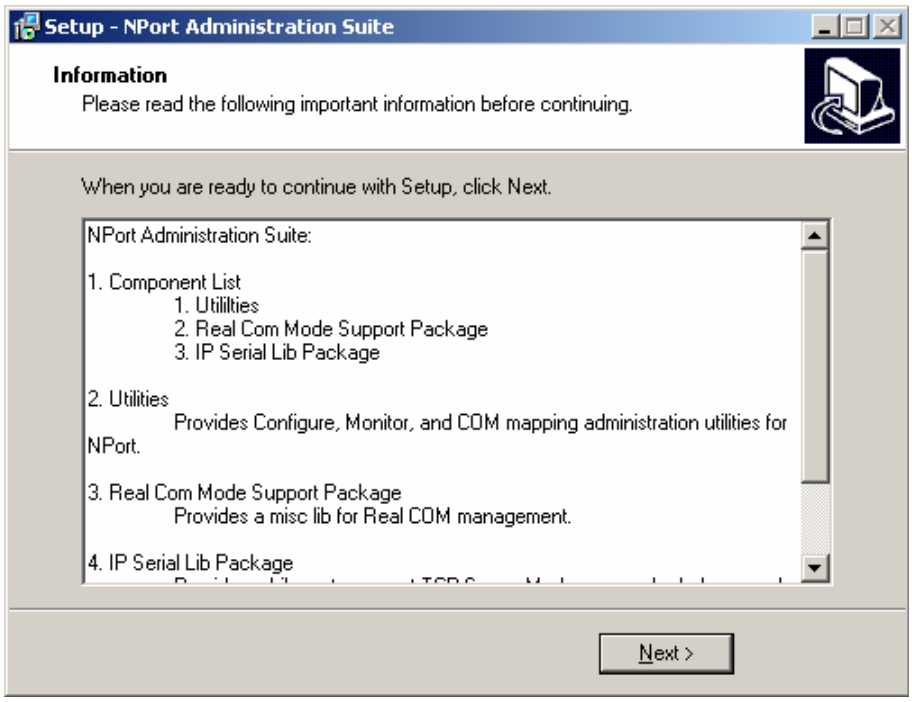
4. Click on **Install** to proceed with the installation.


Setup - NPort Administration Suite
Ready to Install
Setup is now ready to begin installing NPort Administration Suite on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
F:\Program Files\NPortAdminSuite
Start Menu folder:
NPort Administration Suite
< Back
Install
Cancel

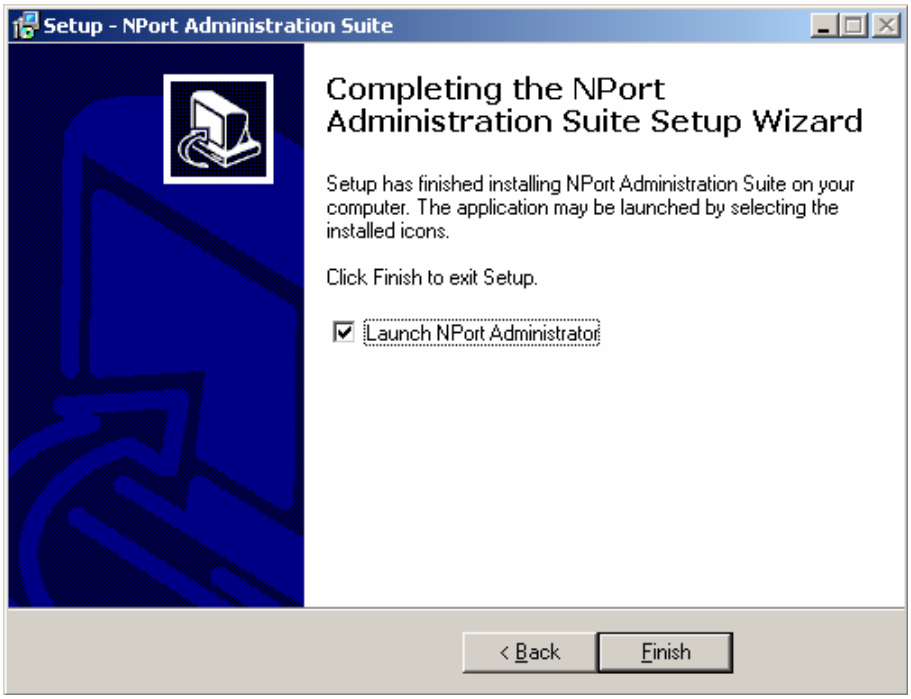
5. The **Installing** window reports the progress of the installation.



6. Click on **Next** to proceed with the installation.


Setup - NPort Administration Suite
Information
Please read the following important information before continuing.
When you are ready to continue with Setup, click Next.
NPort Administration Suite:
1. Component List
1. Utililties
2. Real Com Mode Support Package
3. IP Serial Lib Package
2. Utilities
Provides Configure, Monitor, and COM mapping administration utilities for NPort.
3. Real Com Mode Support Package
Provides a misc lib for Real COM management.
4. IP Serial Lib Package
Next >

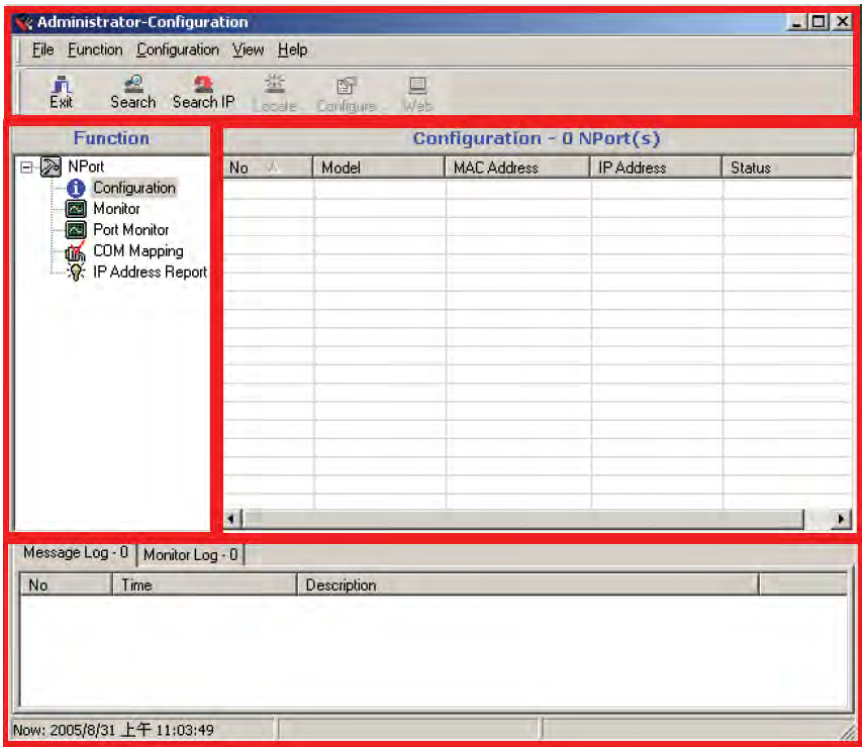
7. Click on **Finish** to complete the installation of NPort IA5250I/5250I-T Administration Suite.


Setup - NPort Administration Suite
Completing the NPort Administration Suite Setup Wizard
Setup has finished installing NPort Administration Suite on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Launch NPort Administrator
< Back
Finish

Configuration

The Administrator-Configuration window is divided into four parts.

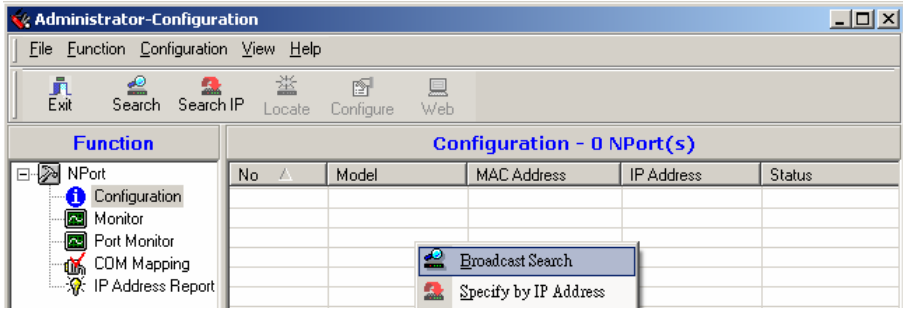
- The top section contains the function list and online help area. (Windows NT does not support this .chm file format.)
- The five Administrator function groups are listed in the left section.
- A list of NPort IA5250I/5250I-T serial device servers, each of which can be selected to process user requirements, is displayed in the right section.
- The activity Log, which displays messages that record the user's processing history, is shown in the bottom section.



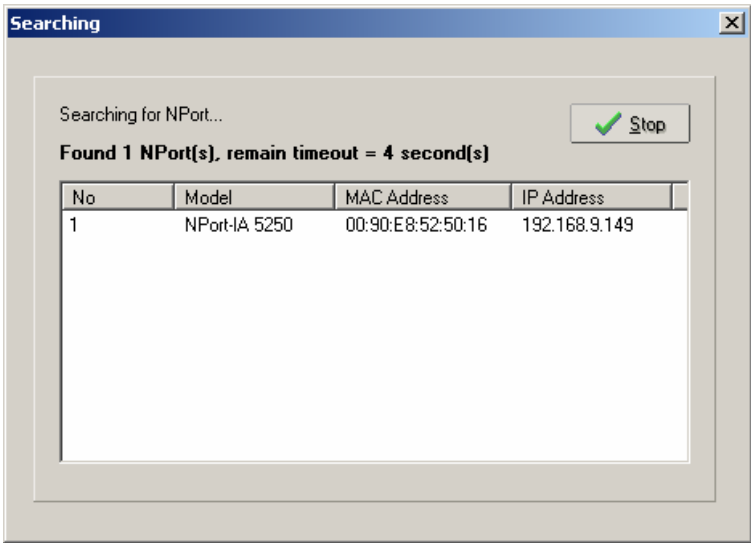
Broadcast Search

The **Broadcast Search** function is used to locate all NPort IA5250I/5250I-Ts that are connected to the same LAN as your computer. Since the Broadcast Search function searches by MAC address and not IP address, all NPort IA5250I/5250I-Ts connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

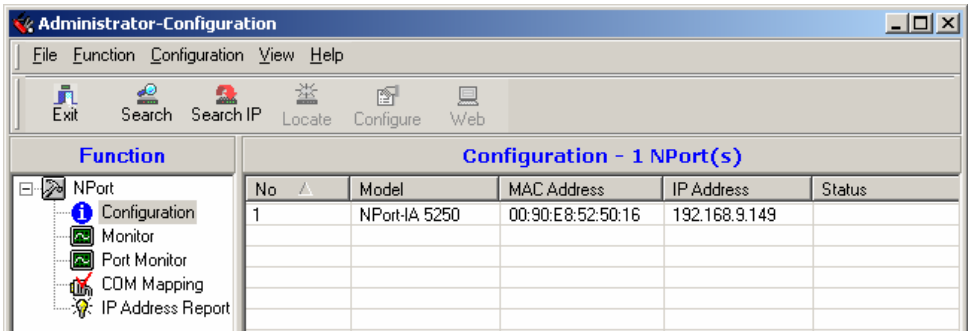
1. Position the cursor in the right middle section of the Administrator window and then click the right mouse button.



2. The Broadcast Search window will open and display the Model, IP Address, MAC Address, and Progress of the search for that particular device.



3. When the search is complete, the Broadcast Search window will close, and the NPort IA5250I/5250I-Ts that were located will be displayed in the right pane of the Administrator window. If you found more than one server connected to this network, refer to the MAC address sticker on your server(s) to determine which server(s) are the ones you wish to configure. To configure an NPort IA5250I/5250I-T, place the cursor over the row displaying that NPort IA5250I/5250I-T's information, and then double click the left mouse button.

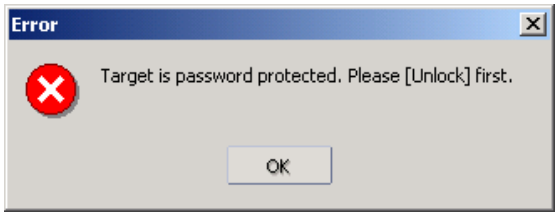


ATTENTION

Before modifying NPort IA5250I/5250I-T's configuration, use Broadcast Search to locate all NPort IA5250I/5250I-Ts connected to the LAN, or use Specify by IP Address to locate a particular NPort IA5250I/5250I-T.

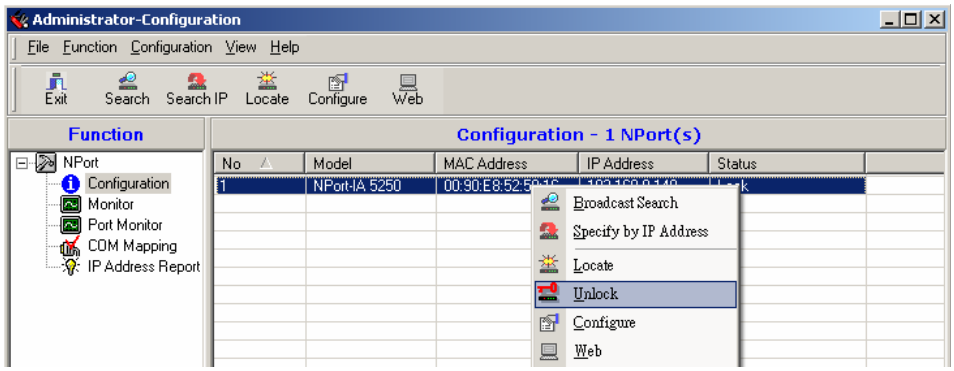
Unlock Password Protection

If the NPort IA5250I/5250I-T is password protected (indicated by "Lock" for Status), you will receive the following error, and you will not be able to use the right click method to open the configuration page.

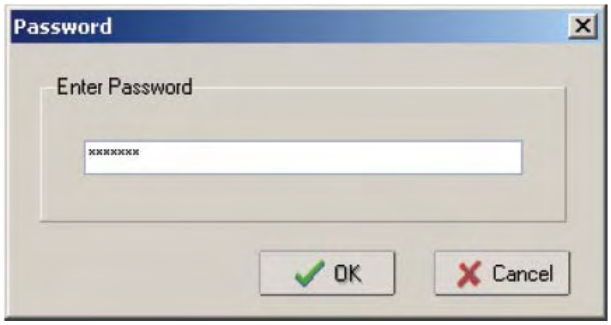


In this case, proceed as follows to "Unlock" the device server.

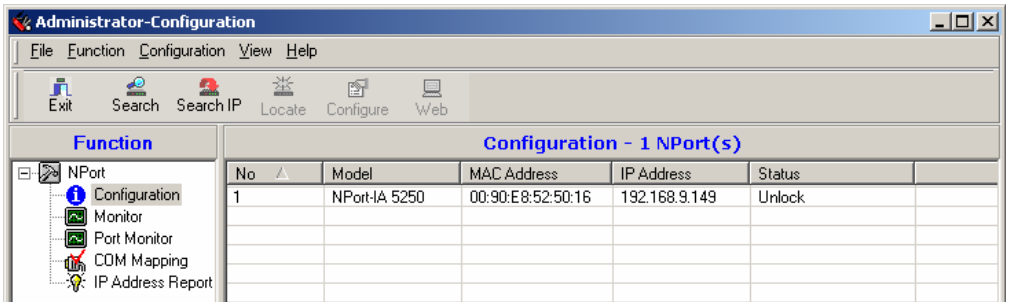
1. Select the NPort IA5250I/5250I-T with "Lock" status, click the right mouse button, and then select **Unlock**.



2. After inputting the correct password, the Administrator will display an "Unlock ok" message.



3. The "Lock" status will change to "Unlock," and the Administrator utility will keep this NPort IA5250I/5250I-T in the Unlock status throughout this Administrator session.



The meanings of the six "Status" states are given below (note that the term Fixed is borrowed from the standard fixed IP address networking terminology):

Lock
The NPort IA5250I/5250I-T is password protected, "Broadcast Search" was used to locate it, and the password has not yet been entered from within the current Administrator session.

Unlock
The NPort IA5250I/5250I-T is password protected, "Broadcast Search" was used to locate it, and the password has been entered from within the current Administrator session. Henceforth during this Administrator session, activating various utilities for this NPort IA5250I/5250I-T will not require re-entering the server password.

Blank
The NPort IA5250I/5250I-T is not password protected, and "Broadcast Search" was used to locate it.

Fixed
The NPort IA5250I/5250I-T is not password protected, and "Search by IP address" was used to locate it.

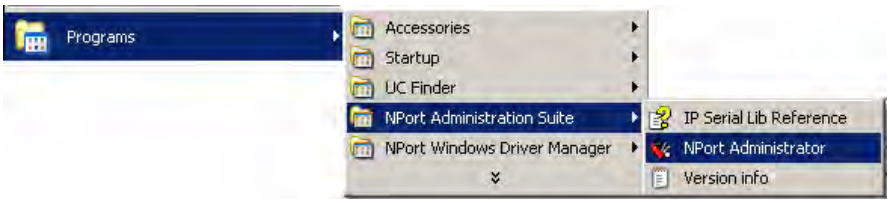
Lock Fixed
The NPort IA5250I/5250I-T is password protected, "Specify by IP address" was used to locate it, and the password has not yet been entered from within the current Administrator session.

Unlock Fixed
The NPort IA5250I/5250I-T is password protected, "Specify by IP address" was used to locate it, and the password has been entered from within the current Administrator session. Henceforth during this Administrator session, activating various utilities for this NPort IA5250I/5250I-T will not require re-entering the server password.

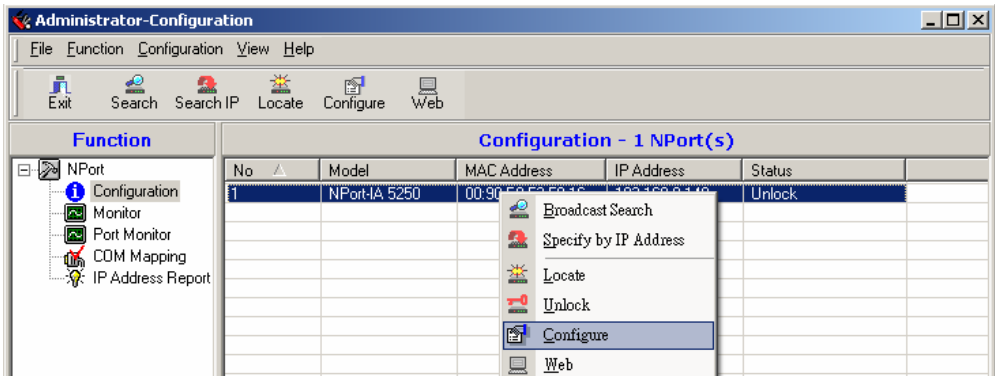
Configuring the NPort IA5250I/5250I-T

In this section, we illustrate how to access the NPort IA5250I/5250I-T's configuration utility. You should first make sure that you can connect over the network from your computer to the NPort IA5250I/5250I-T.

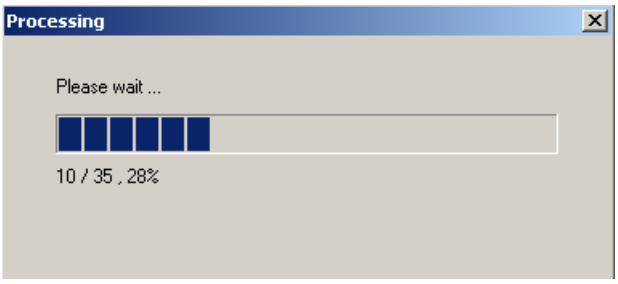
1. To start NPort Administrator, click on **Start → NPort Administration Suite → NPort Administrator**.



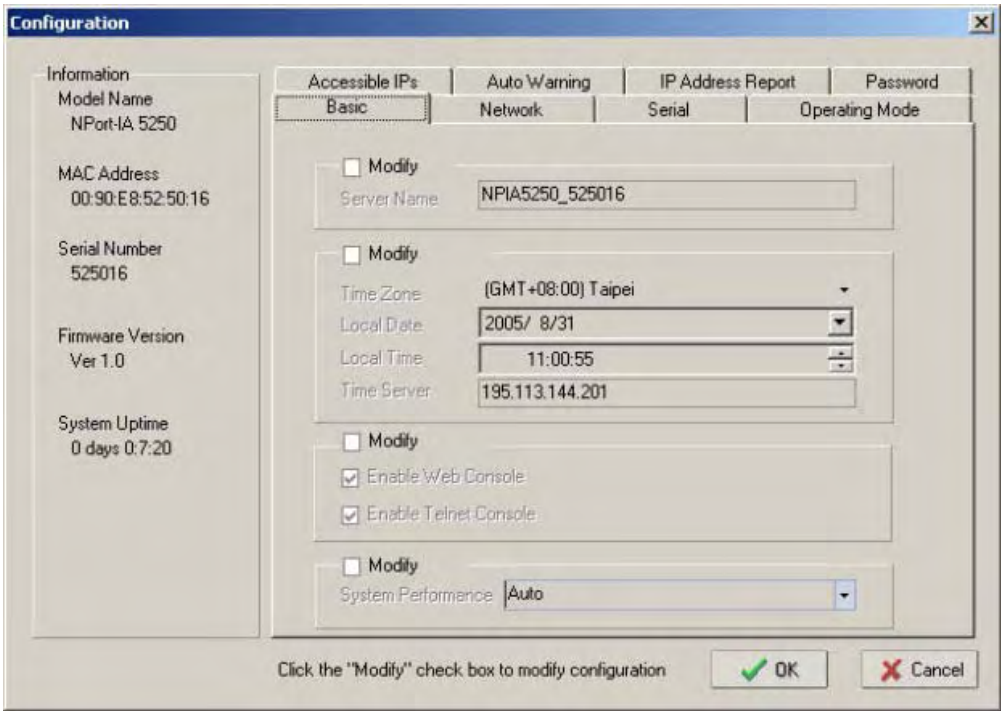
2. Unlock the NPort IA5250I/5250I-T you wish to configure if it is password protected. Right click on the NPort IA5250I/5250I-T and select **Configure** to start the configuration.



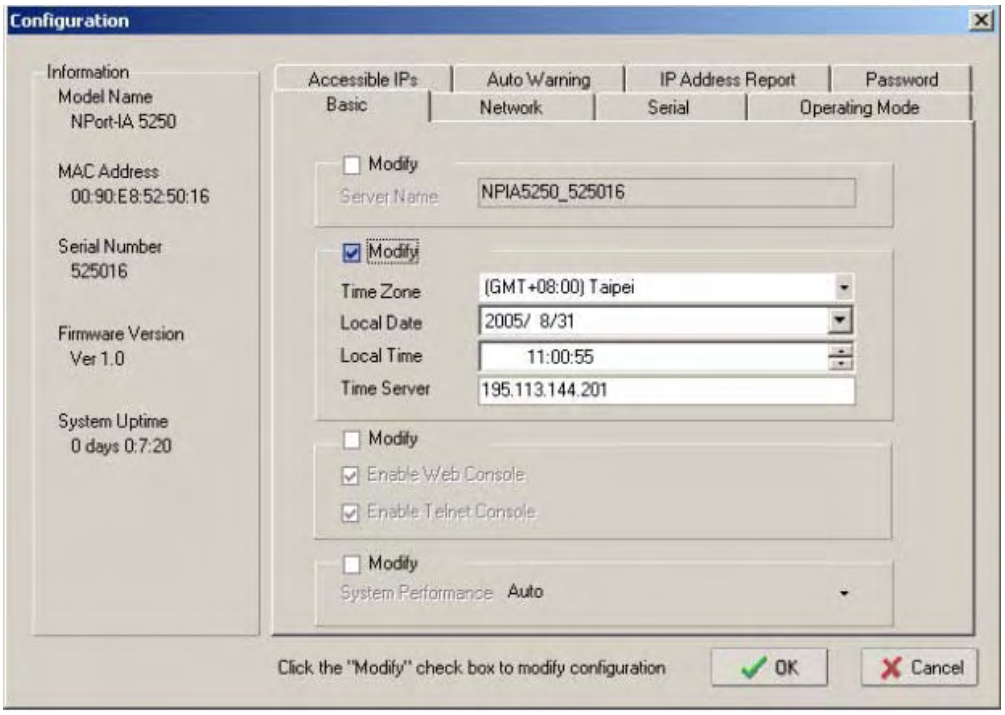
3. The progress bar shows that Administrator is retrieving configuration information from the specific NPort IA5250I/5250I-T.



4. Refer to Chapter 5 for each parameter's function definition. To modify the configuration, you must first click in the modify box to activate the parameter setting box. For example, click on the middle modify box.



5. You will now be able to modify **Time Zone, Local Date, Local Time,** and **Time Server**.



ATTENTION

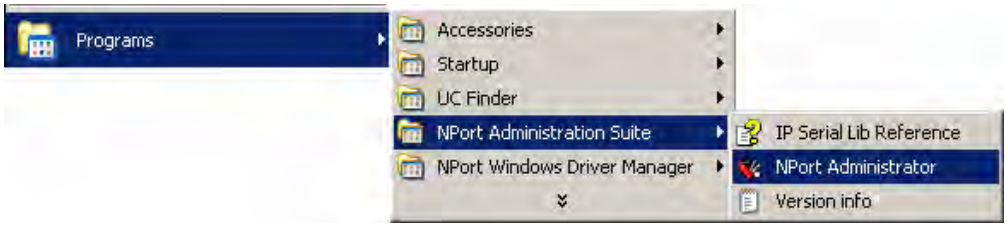
You can simultaneously modify the configurations of multiple NPort IA5250I/5250I-Ts that are of the same model.

To select multiple NPort IA5250I/5250I-Ts, hold down the Ctrl key when selecting additional NPort IA5250I/5250I-Ts, or hold down the Shift key to select a group of NPort IA5250I/5250I-Ts.

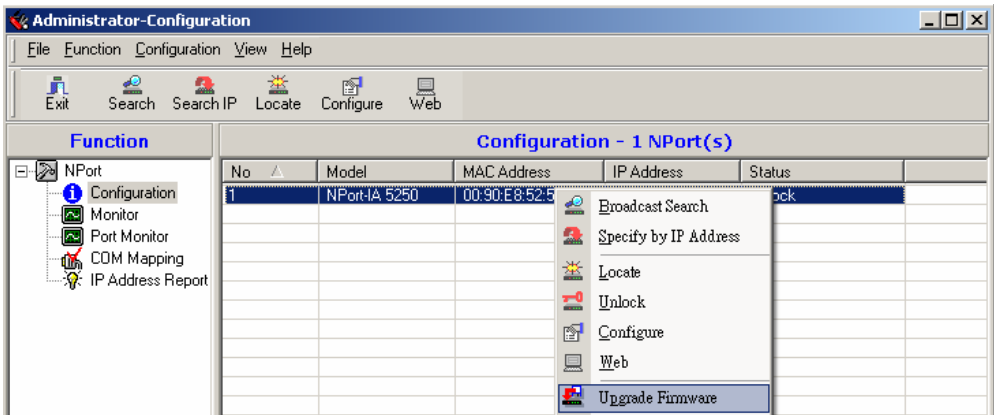
Upgrading the Firmware

Follow these steps to upgrade the firmware of an NPort IA5250I/5250I-T.

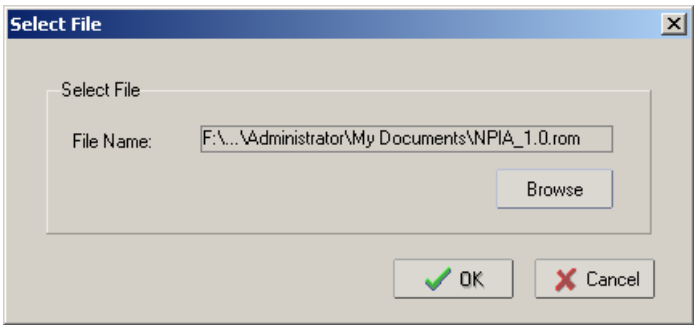
1. To start NPort Administrator, click on **Start → NPort Administration Suite → NPort Administrator**.



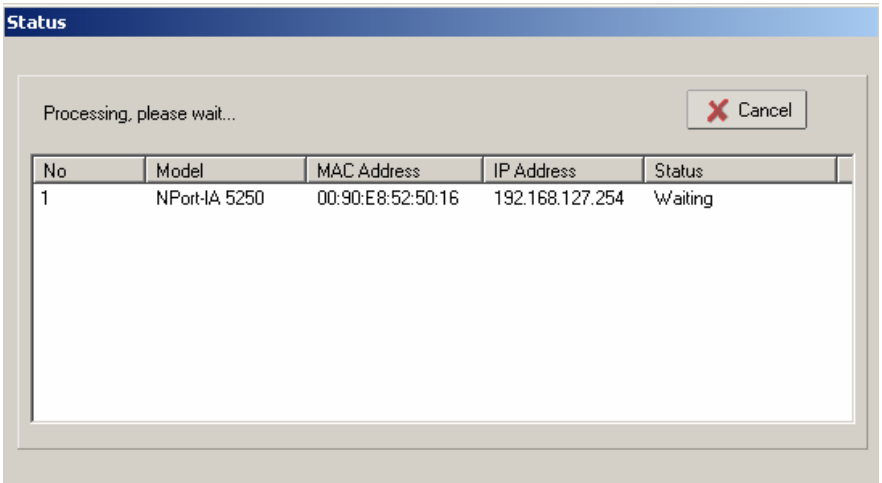
2. Unlock the NPort IA5250I/5250I-T you wish to configure if it is password protected. Right click on a specific NPort IA5250I/5250I-T and select the **Upgrade Firmware** function to start upgrading the firmware.



3. Select the correct ROM file to download.



4. Wait while the Upgrade Firmware action is processed.



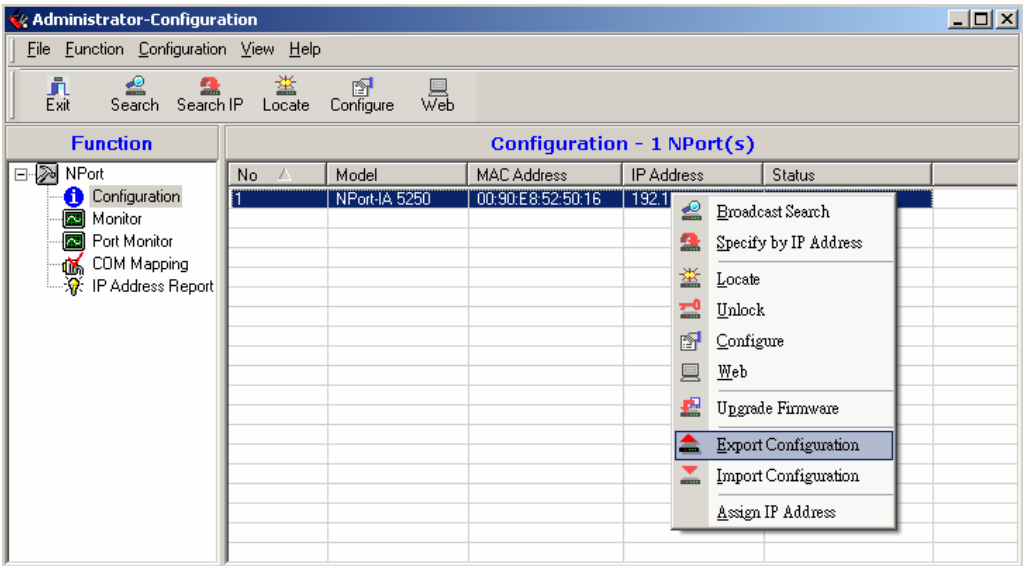
ATTENTION

You can simultaneously upgrade the firmware of multiple NPort IA5250I/5250I-Ts that are of the same model.

To select multiple NPort IA5250I/5250I-Ts, hold down the Ctrl key when selecting an additional NPort IA5250I/5250I-T, or hold down the Shift key to select a block of NPort IA5250I/5250I-Ts.

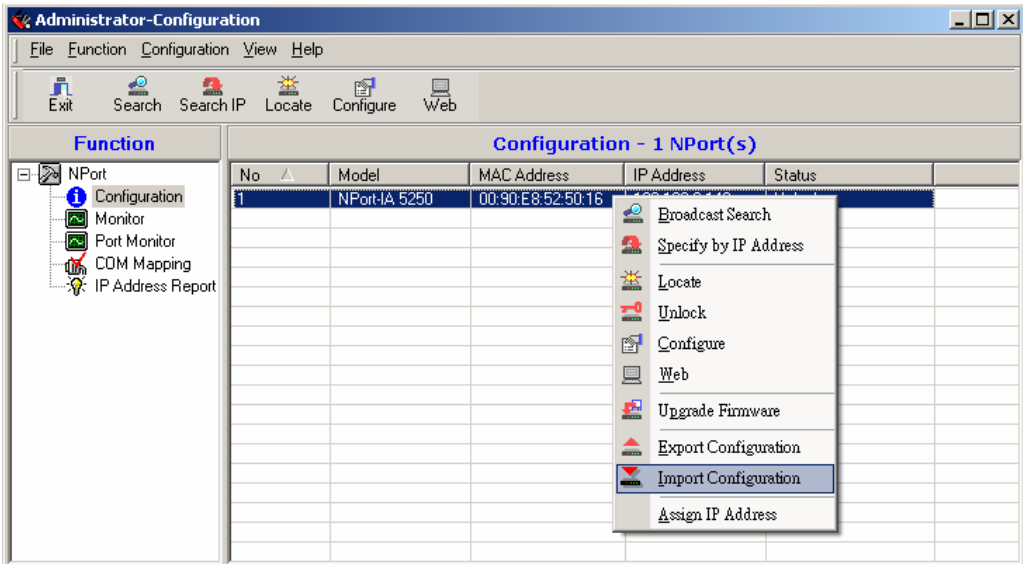
Export Configuration

To export the configuration of an NPort IA5250I/5250I-T, right click on the NPort IA5250I/5250I-T, select **Export Configuration**, and then follow the onscreen instructions. The Export Configuration function is a handy tool that can be used to produce a text file containing the current configuration of a particular NPort IA5250I/5250I-T.



Import Configuration

The Import Configuration function is used to import an NPort IA5250I/5250I-T configuration from a file into one or more of the same model NPort IA5250I/5250I-T. To import a configuration, first select the target servers, click the right mouse button, and then select **Import Configuration**. Follow the onscreen instructions to locate the configuration file and start downloading the file.



ATTENTION

You can simultaneously import the same configuration file into multiple NPort IA5250I/5250I-Ts that are of the same model.

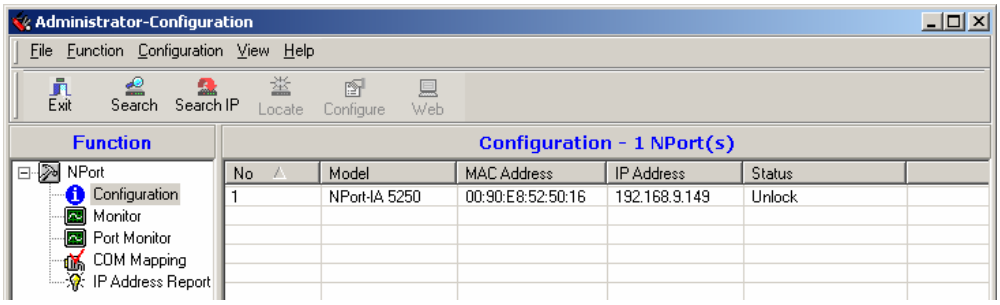
To select multiple NPort IA5250I/5250I-Ts, hold down the Ctrl key when selecting an additional NPort IA5250I/5250I-T, or hold down the Shift key to select a block of NPort IA5250I/5250I-Ts.

Monitor

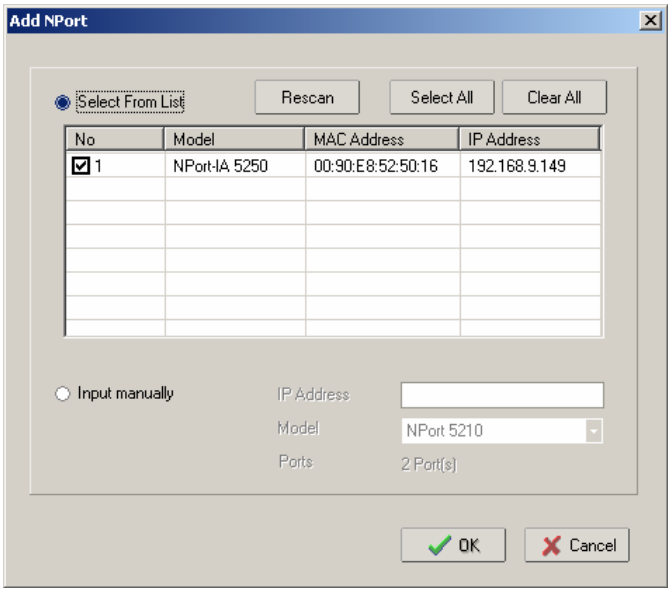
Use one of the following two methods to start the Monitor function.

Broadcast Search → Monitor → Add Target

1. With **Configuration** selected under **Function**, use Broadcast Search to locate all NPort device servers on your LAN.

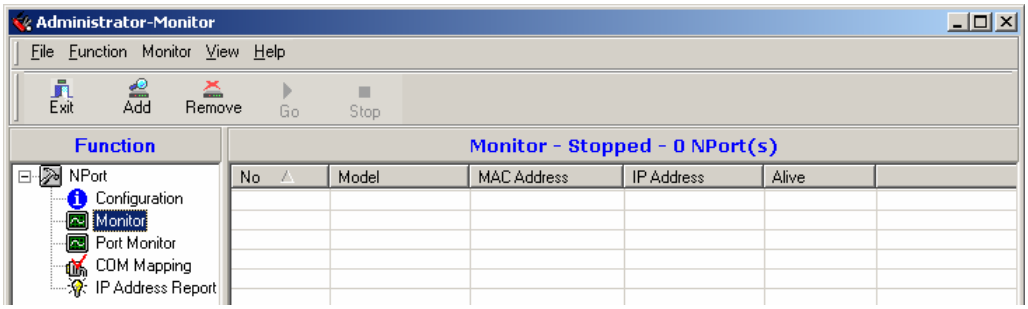


2. Next, click on **Monitor → Add Target**, select your targets from the list, and then click on **OK**.

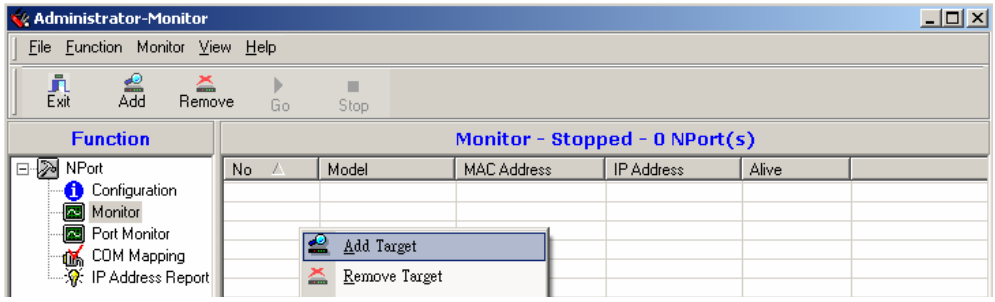


Monitor → Add Target → Rescan

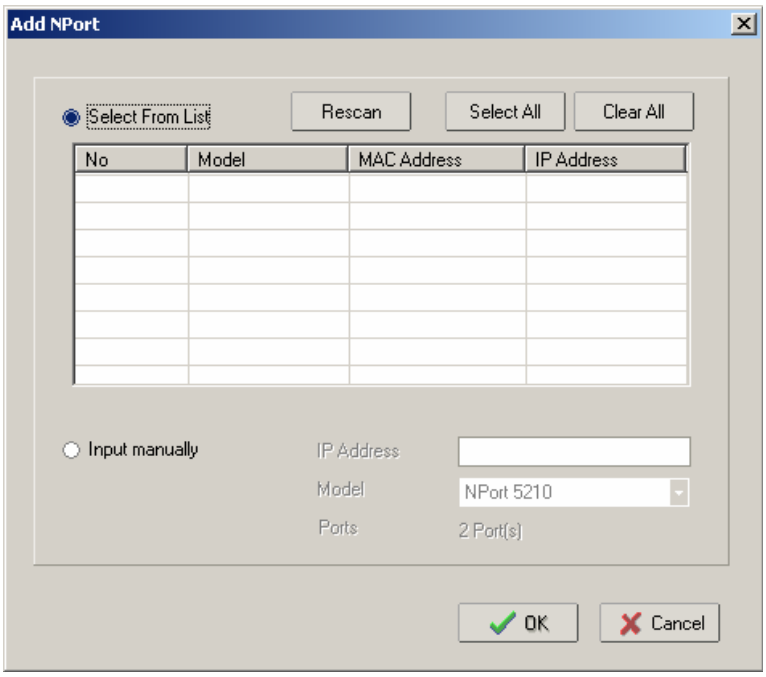
1. Click on **Monitor** under **Function**.



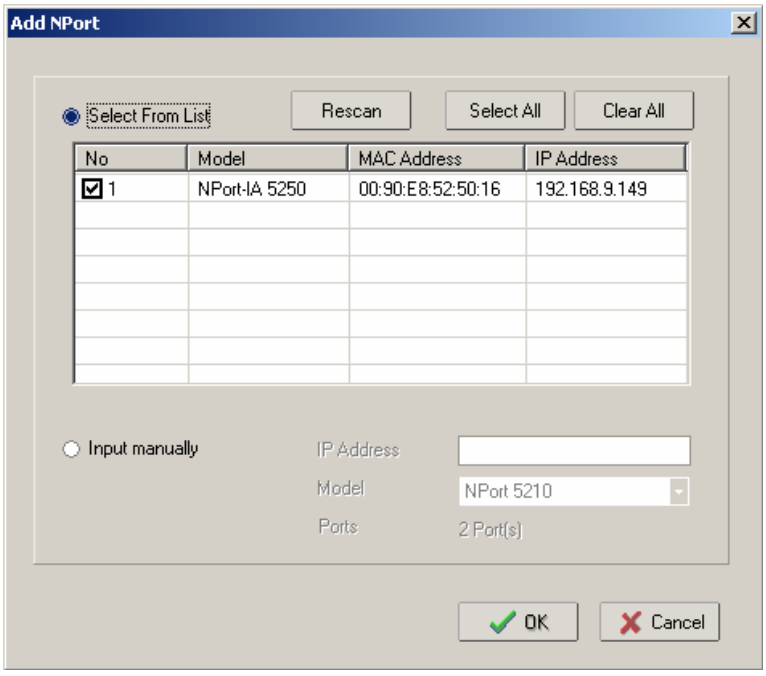
2. Click on **Monitor → Add Target** from the menu bar, or click the right mouse button and select **Add Target**.



3. Click on **Rescan.**

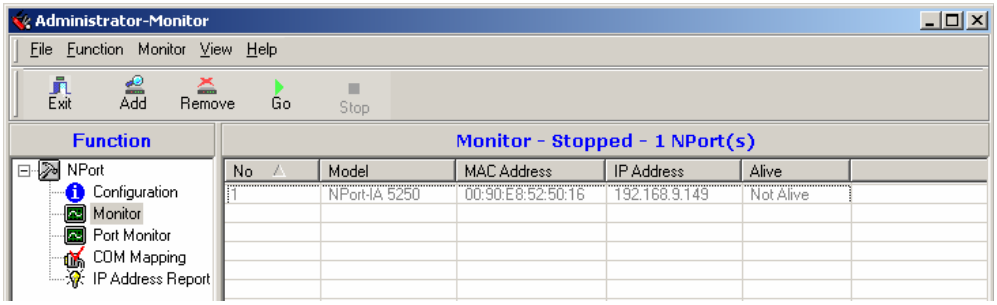


4. Select your targets from the list, and then click on **OK**.

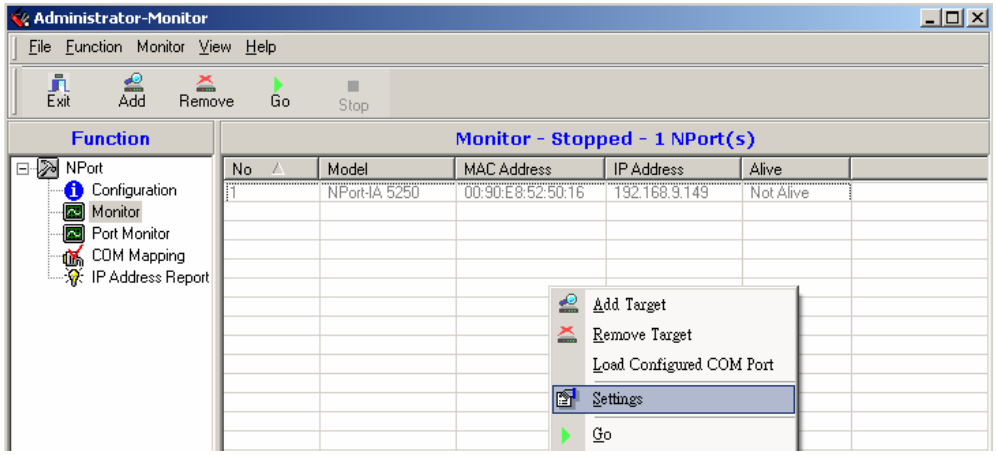


Once the Monitor function is running:

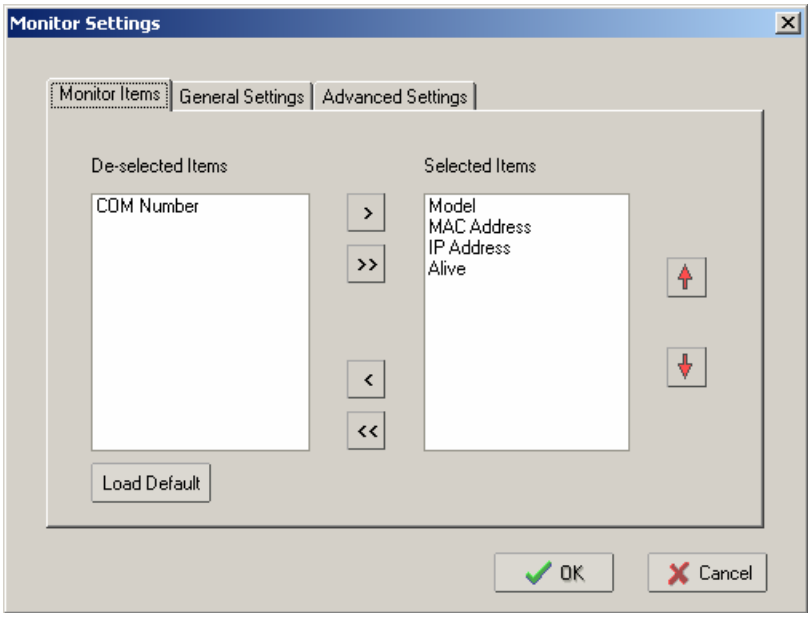
1. The NPort IA5250I/5250I-T list will appear on the Monitor screen.



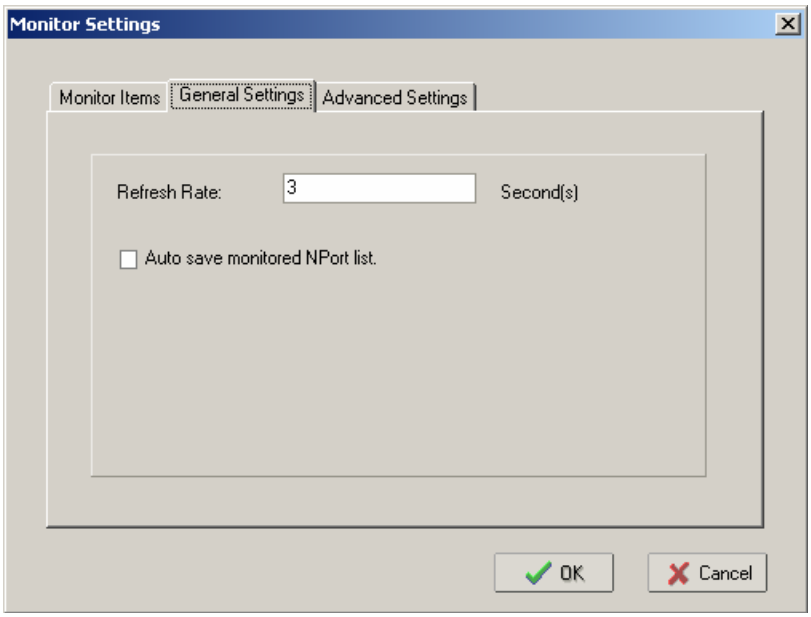
2. Right click the panel and select **Settings**.



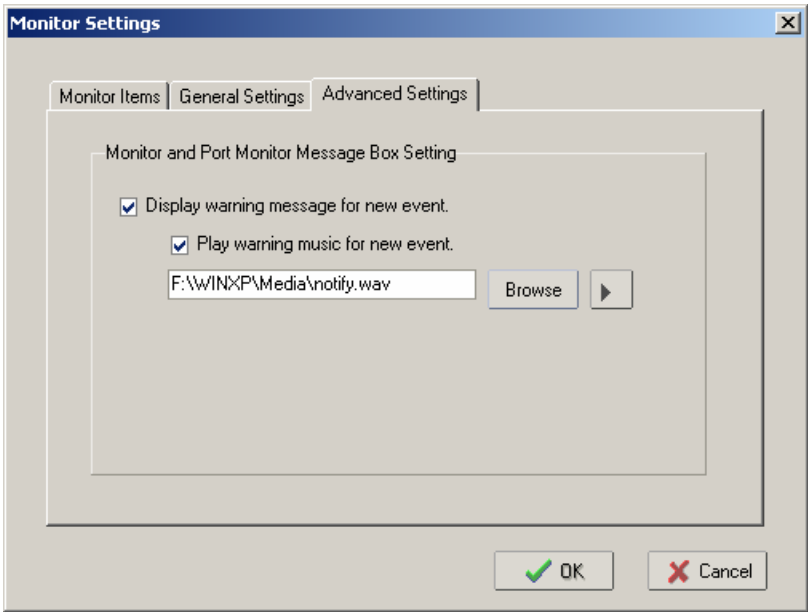
3. Select or de-select **Monitor Items**. Use the single arrowhead buttons to move highlighted items from one box to the other. Use the double arrowhead buttons to move all items in one box to the other.



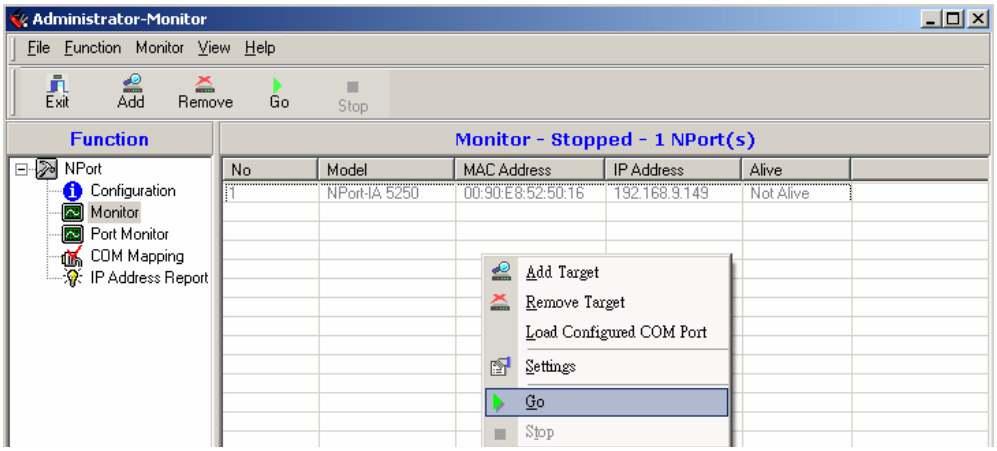
4. Select a **Refresh Rate** (the default is 3 seconds) on the General Settings page.



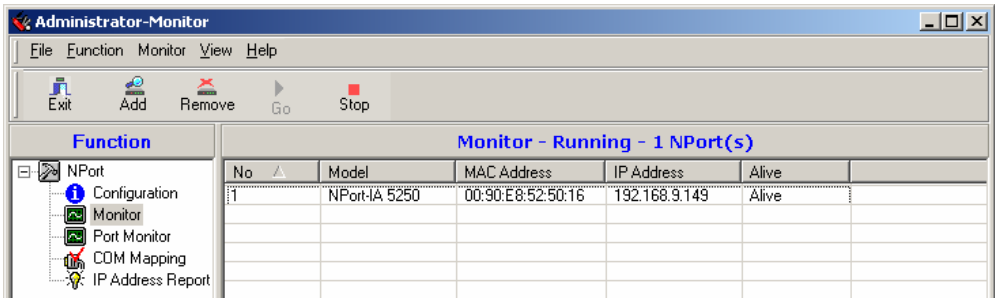
5. On the **Advanced Settings** page, select **Display warning message for new event** and/or **Play warning music for new event**. In the second case, you must enter the path to the WAV file that you want to be played. "New event" means that one of the NPort IA5250I/5250I-Ts in the monitor is "Alive" or "Not Alive," or has lost connection with the Monitor program.



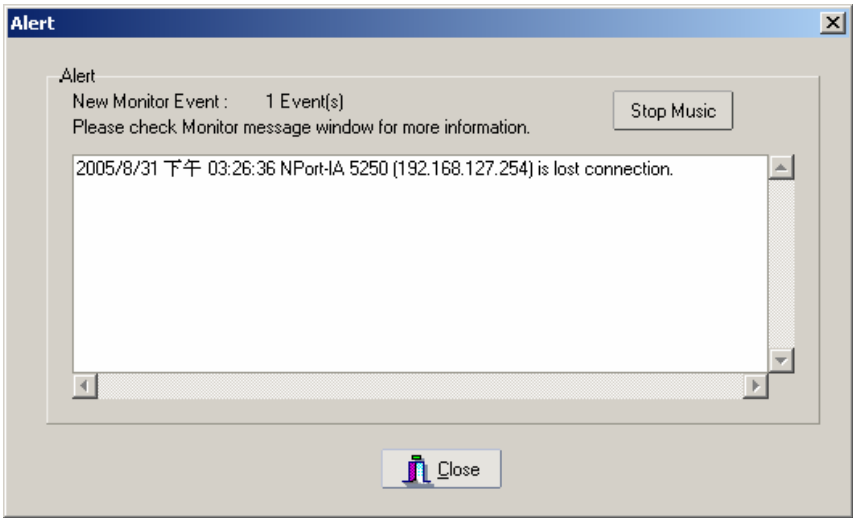
6. Right click in the NPort IA5250I/5250I-T list section and select **Go** to start monitoring the NPort IA5250I/5250I-T.



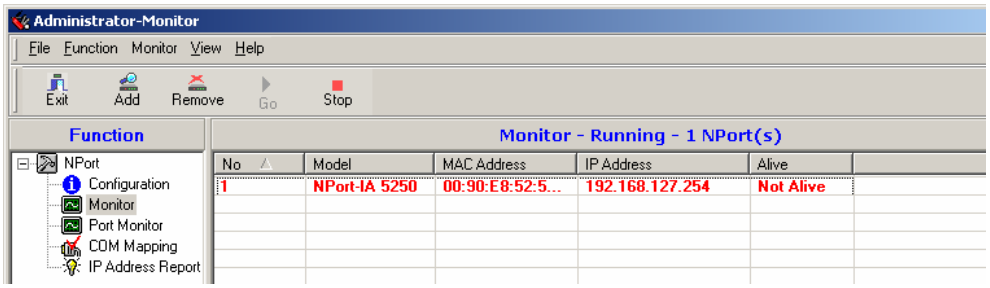
7. For this example, the NPort IA5250I/5250I-Ts shown in the list will be monitored.



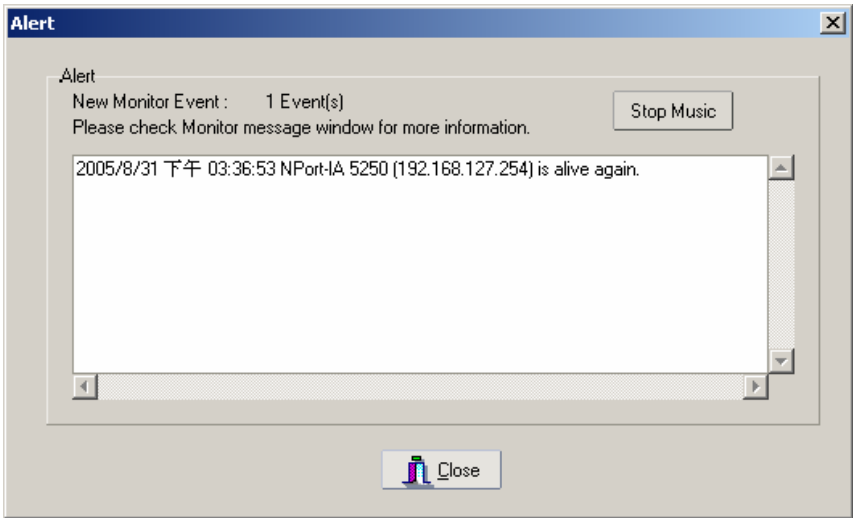
8. When one of the NPort IA5250I/5250I-Ts loses connection with the Monitor program, a warning alert will display automatically. The warning music will be played at the same time.


Alert
Alert
New Monitor Event : 1 Event(s)
Please check Monitor message window for more information.
Stop Music
2005/8/31 下午 03:26:36 NPort-IA 5250 (192.168.127.254) is lost connection.
Close

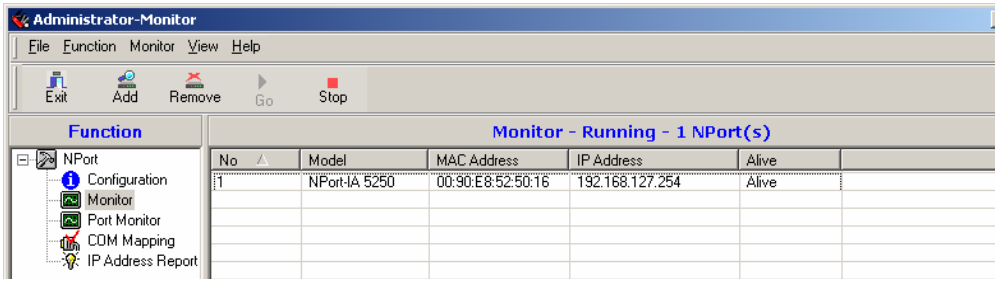
9. In the Monitor screen, you can see that the NPort IA5250I/5250I-Ts that are "Not Alive" are shown in red color.



10. If the NPort IA5250I/5250I-T gets reconnected, a warning will be displayed to remind the user that the NPort IA5250I/5250I-T is now "Alive."

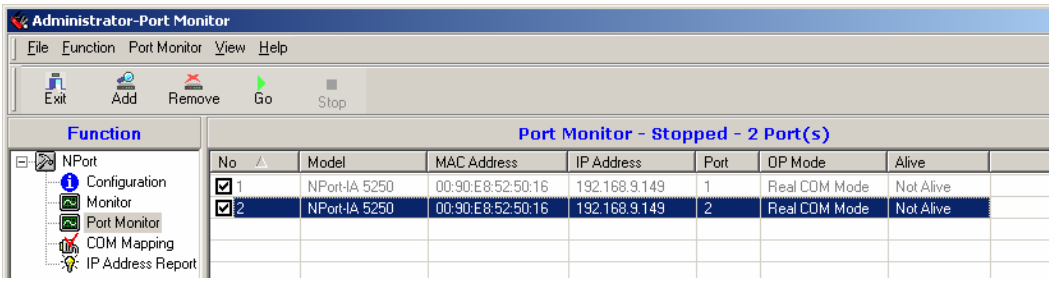

Alert
Alert
New Monitor Event : 1 Event(s)
Please check Monitor message window for more information.
Stop Music
2005/8/31 下午 03:36:53 NPort-IA 5250 (192.168.127.254) is alive again.
Close

11. The NPort IA5250I/5250I-Ts that were reconnected, and are now "Alive," will be shown in black color.

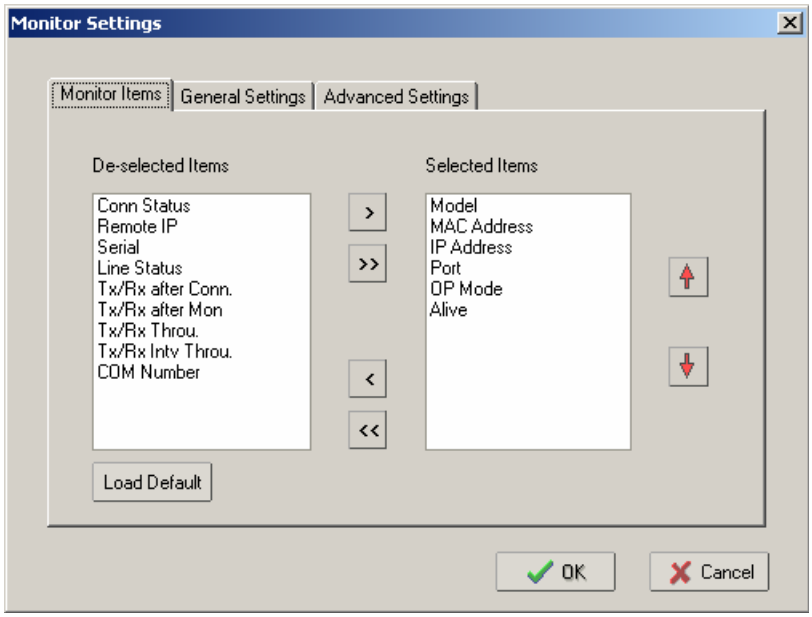


Port Monitor

The process described here is the same as in the previous "Monitor" section. The only difference is that you can select more items under Port Monitor than under Monitor.


Administrator-Port Monitor
File Function Port Monitor View Help
Exit Add Remove Go Stop
Function
Port Monitor - Stopped - 2 Port(s)
NPort
Configuration
Monitor
Port Monitor
COM Mapping
IP Address Report
No Model MAC Address IP Address Port OP Mode Alive
1 NPort-IA 5250 00:90:E8:52:50:16 192.168.9.149 1 Real COM Mode Not Alive
2 NPort-IA 5250 00:90:E8:52:50:16 192.168.9.149 2 Real COM Mode Not Alive

Select or de-select **Monitor Items**. Use the single arrowhead buttons to move highlighted items from one box to the other. Use the double arrowhead buttons to move all items in one box to the other.



COM Mapping

Windows Administration Suite comes with Windows Real COM drivers. After you install NPort IA5250I/5250I-T Administration Suite, there are two ways to set up the NPort IA5250I/5250I-T serial port as your host's remote COM port.

The first way is with **On-line COM Mapping**. On-line COM Mapping will check to make sure that the NPort IA5250I/5250I-T is connected correctly to the network, and then install the driver on the host computer.

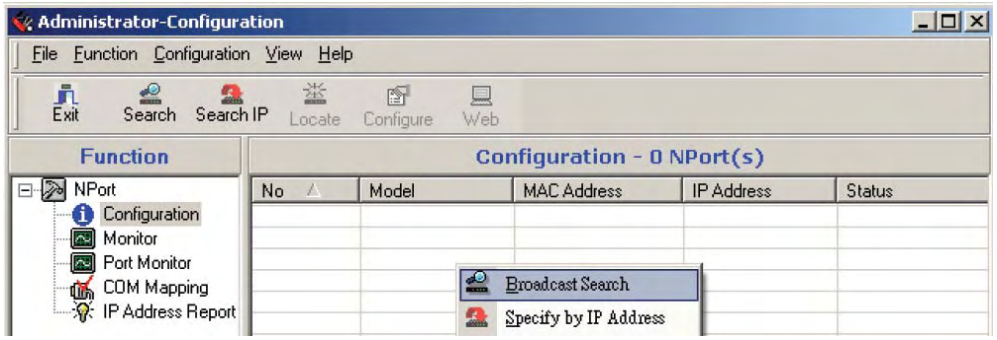
The second way is with **Off-line COM Installation**, without first connecting the NPort IA5250I/5250I-T to the network. Off-line COM Mapping can decrease the system integrator's effort by solving different field problems. Via off-line installation, users can first process software installation for the host, and then install the NPort IA5250I/5250I-T to different fields.

Use the following procedure to map COM ports:

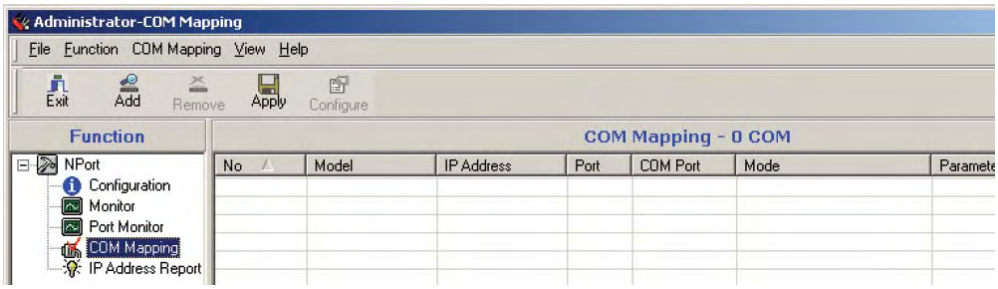
1. On-line COM Mapping:
   Connect the NPort IA5250I/5250I-T to the network → Set the NPort IA5250I/5250I-T to the proper IP address → Map COMs to your host → Apply Change.
2. Off-line COM Mapping:
   Map COMs to your host → Apply Change → Connect the NPort IA5250I/5250I-T to the network → Configure the NPort IA5250I/5250I-T's IP address.

On-line COM Mapping

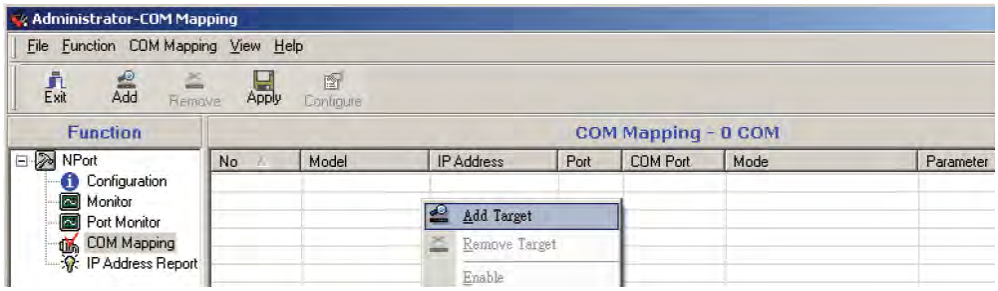
1. **Broadcast Search** for NPort IA5250I/5250I-Ts on the network.



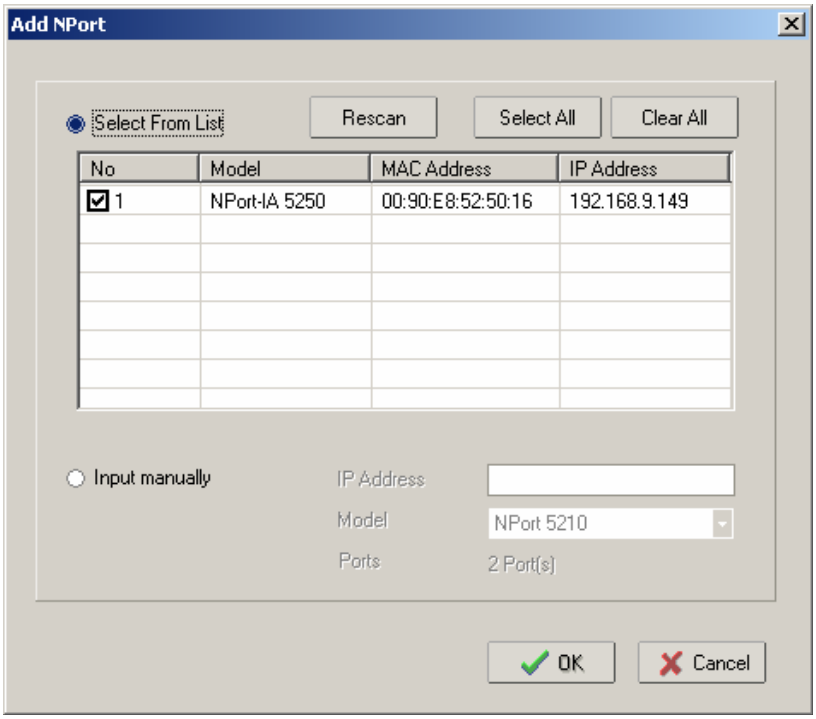
2. Select the **COM Mapping** function group.



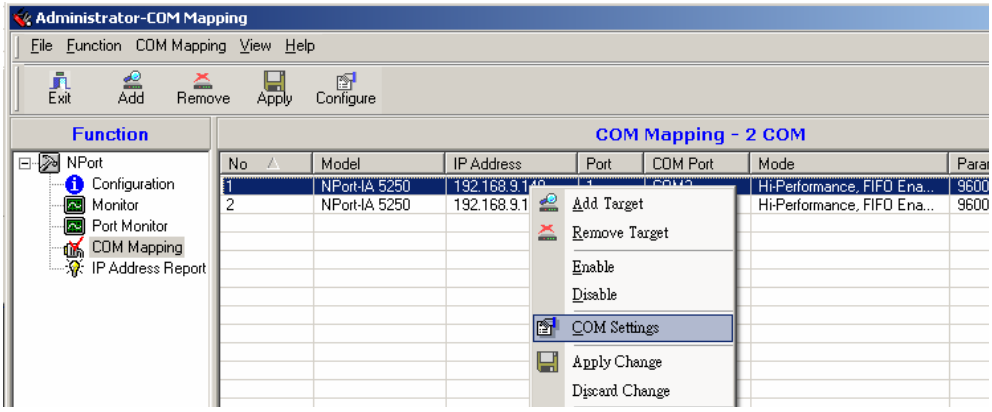
3. Add the target to which you would like to map COM ports.



4. The NPort IA5250I/5250I-T list that appears is the list generated by the previous Broadcast Search. Select the NPort IA5250I/5250I-T to which you would like to map COM ports.



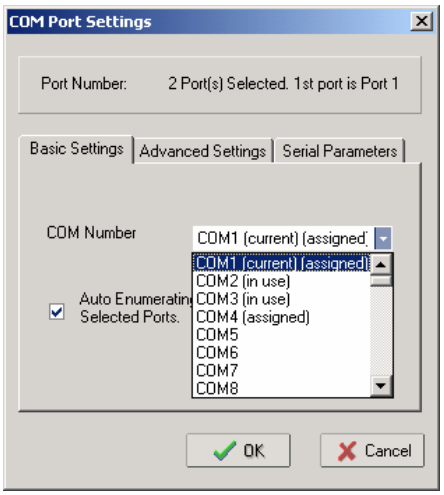
5. Select **COM Settings** to modify COM No., default setting, etc.

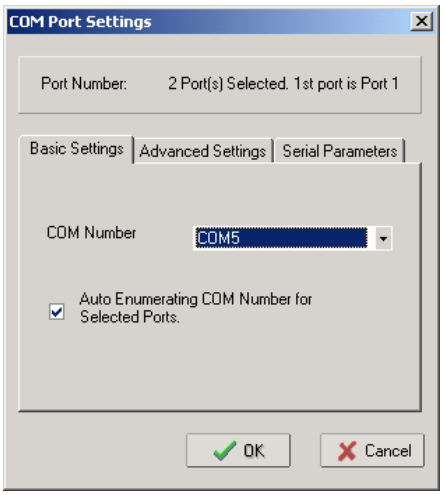


6. Select the **COM Number**.

   COM ports that are "In use" or "Assigned" will also be indicated in this drop-down list.

   If you select multiple serial ports or multiple NPort IA5250I/5250I-Ts, remember to check the "Auto Enumerating" function to use the COM No. You select as the first COM No.





7. **Hi-performance** mode is the default for Tx mode. If the driver completes sending data out to the NPort IA5250I/5250I-T, the driver will respond "Tx Empty" to the program.

   Under **Classical mode**, the driver will not notify the user's program that Tx is completed until all Tx data has been sent out from the NPort IA5250I/5250I-T. This mode will cause lower throughput. If you want to ensure that all data is sent out before further processing, classical mode is recommended.

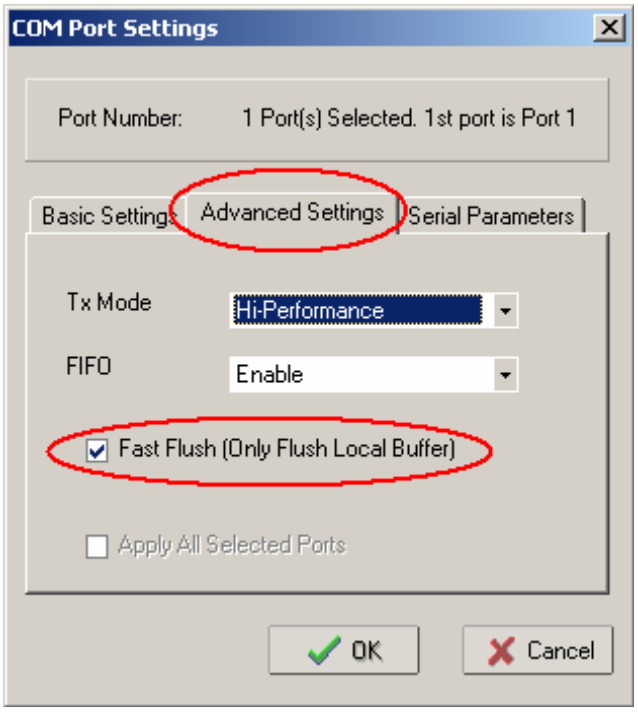
   Enable/Disable Tx/Rx FIFO. If disabled, the NPort IA5250I/5250I-T will send one byte each time the Tx FIFO becomes empty; and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput. If you want to use XON/XOFF flow control, we recommend setting FIFO to Disable.

   Network Timeout is used when the COM port is opened. Since the COM port is on the network rather than physically attached to the PC host, there can be some lag when communicating with the serial device. The Network Timeout field allows you to set the number of milliseconds before an operation will time out. The default value is 5000 milliseconds, and between 500 and 20000 milliseconds can be entered.

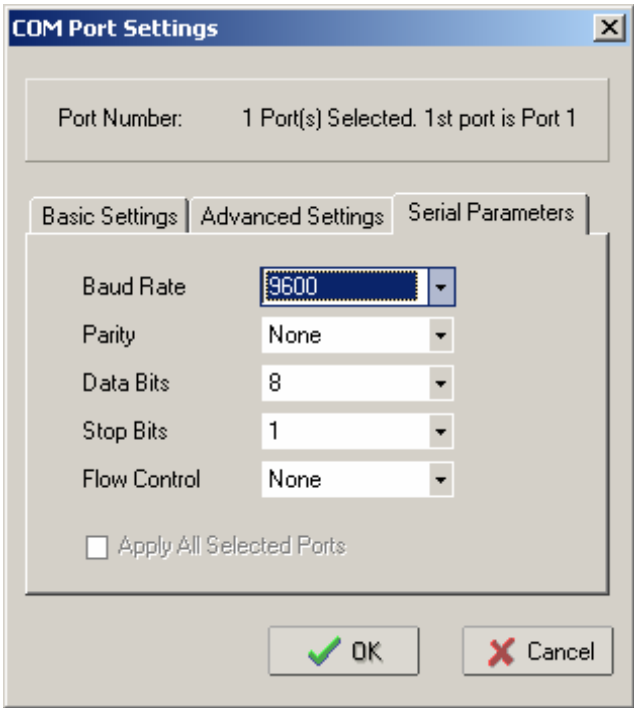
   Fast Flush (only flush local buffer)

   - We have added one optional Fast Flush function to Moxa's new NPort Real COM driver. **NPort Administrator Suite for 2G NPort** adds it after version 1.2.
   - For some applications, the user's program will use the Win32 "PurgeComm()" function before it reads or writes data. With our design, after the program uses this Purge Comm() function, the NPort driver will keep querying the NPort's firmware several times to make sure there is really no data queued in the NPort firmware buffer, rather than just flushing the local buffer. This kind of design is used because of some special considerations. However, it might take more time (on the order of several hundred milliseconds) than a native COM1, because it needs to work via Ethernet. That's why the native COM ports on the motherboard can work fast with this function call, but the NPort requires much more time. In order to accommodate other applications that require a faster response time, the new NPort driver implements a new "Fast Flush" option. Note that by default, this function is disabled.

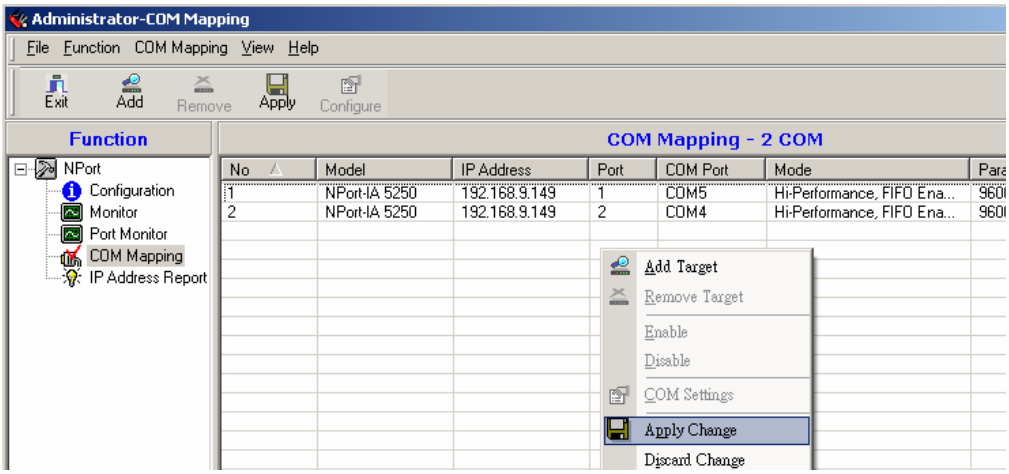
- To begin with, make sure there are some "PurgeComm()" functions being used in your application program. In this kind of situation, you might find that your NPort exhibits a much poorer operation performance than when using the native COM1 port. Once you have enabled the "Fast Flush" function, you can check to see if there has been an improvement in performance.
- By default, the optional "Fast Flush" function is disabled. If you would like to enable this function, from the "NPort Administrator," double click on the COM ports that are mapped to the NPort, and then select the "Fast Flush" checkbox. You should find that when "Fast Flush" is enabled, the NPort driver will work faster with "PurgeComm()."



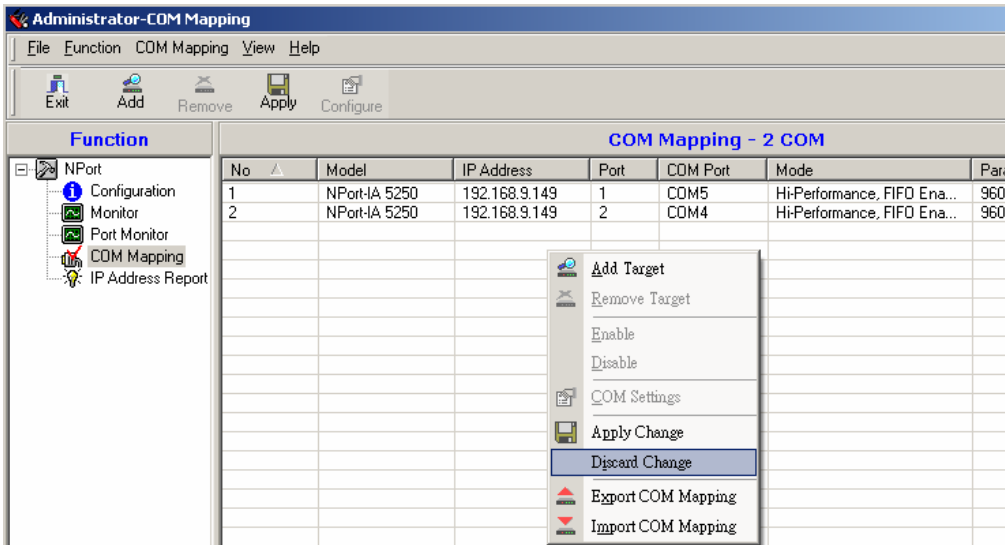
8. The Serial Parameter settings shown here are the default settings when the NPort IA5250I/5250I-T is powered on. However, the program can redefine the serial parameters to different values after the program opens the port via Win 32 API.



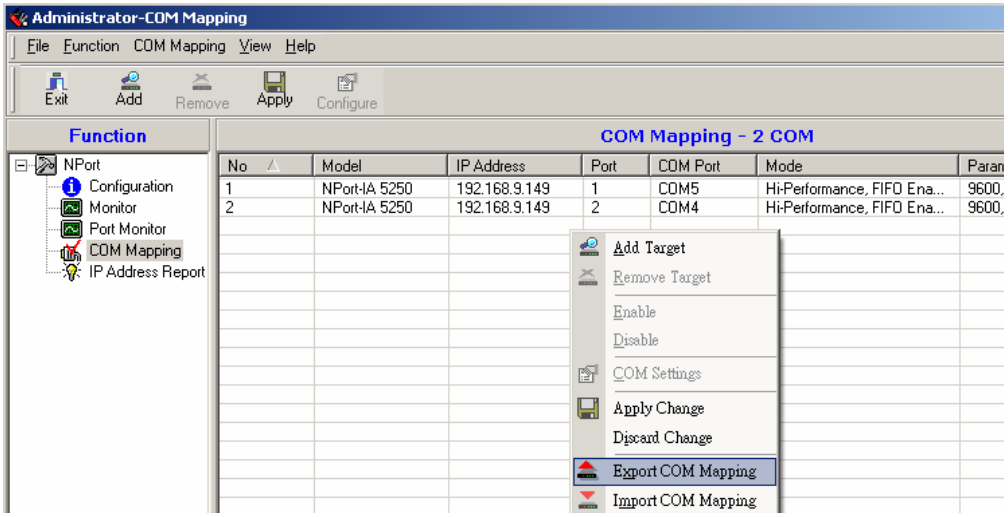
9. After setting the COM Mapping, remember to select **Apply Change** to save the information in the host system registry. The host computer will not have the ability to use the COM port until after **Apply Change** is selected.



10. Select **Discard Change** to tell Administrator NOT to save the COM Mapping information to the host.

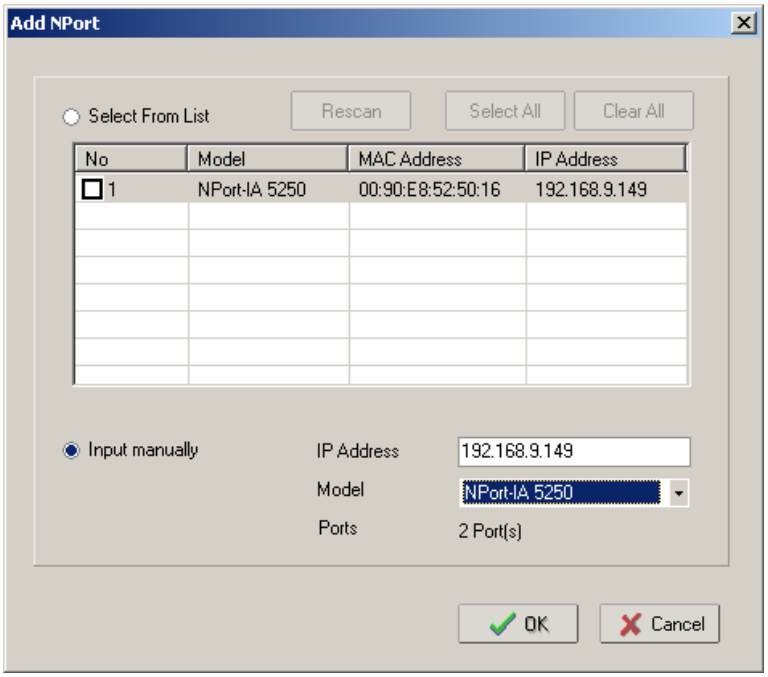


11. To save the configuration to a text file, select **Export COM Mapping**. You will then be able to import this configuration file to another host and use the same COM Mapping settings in the other host.

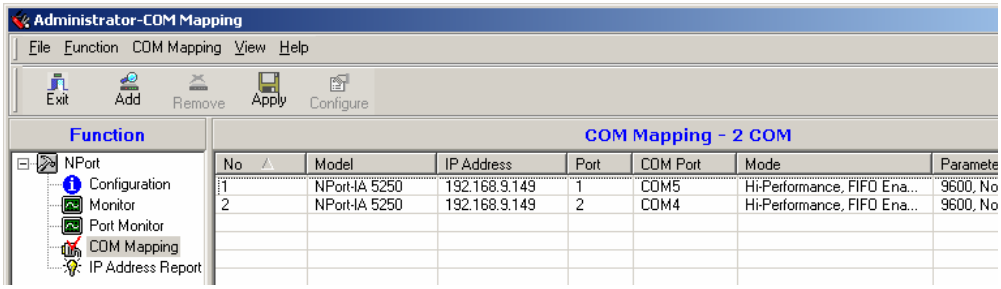


Off-line COM Mapping

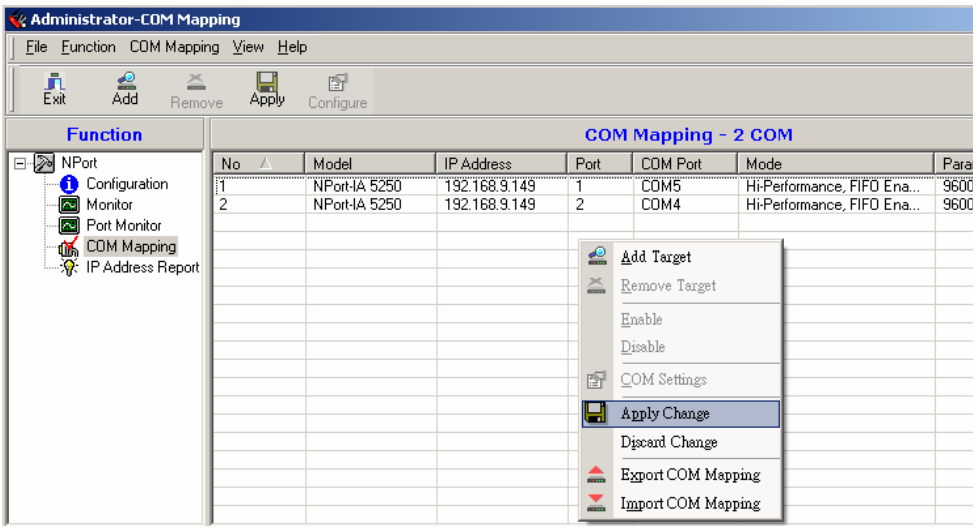
1. Add a target by inputting the IP address and selecting the Model Name without physically connecting the NPort IA5250I/5250I-T to the network.



2. Modify the port settings as needed.



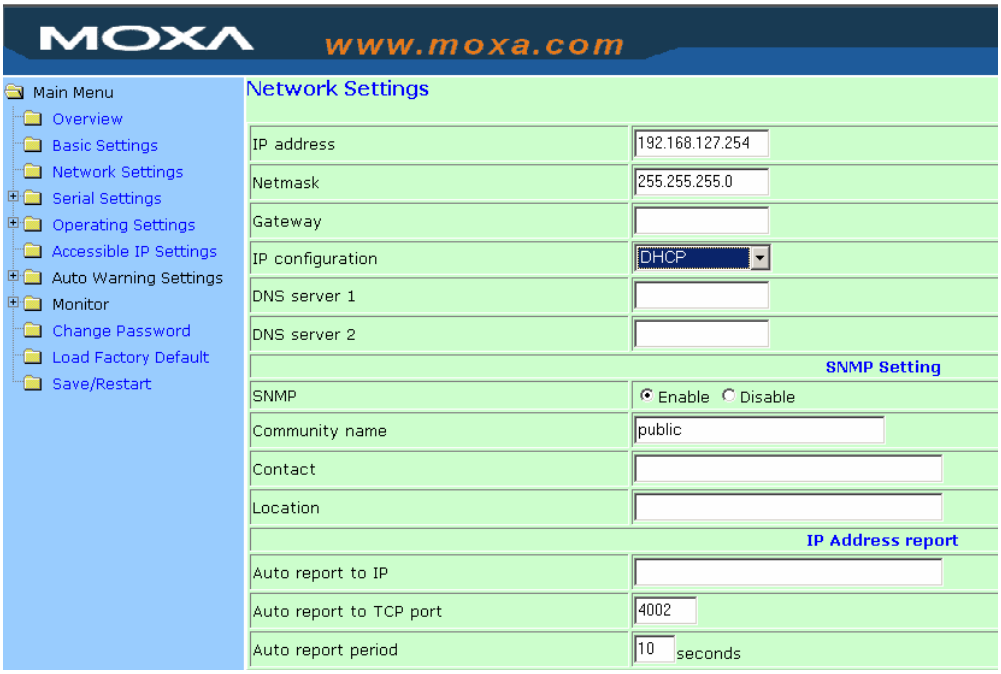
3. Right click in the NPort list section and select **Apply Change**.



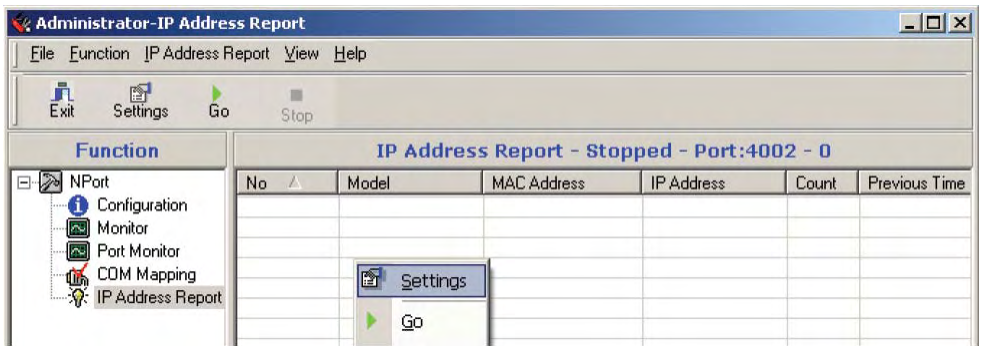
IP Address Report

When the NPort IA5250I/5250I-T is used in a dynamic IP environment, users must spend more time with IP management tasks. To make things easier, the NPort IA5250I/5250I-T can periodically report its IP address to the IP location server, in case the address has changed. The IP location server is the host PC on which you installed the NPort Adminustration Suite.

1. Configure the NPort IA5250I/5250I-T with Dynamic IP settings (DHCP, BOOTP, or DHCP/BOOTP). Assign the remote Auto IP report server's IP address and UDP port.

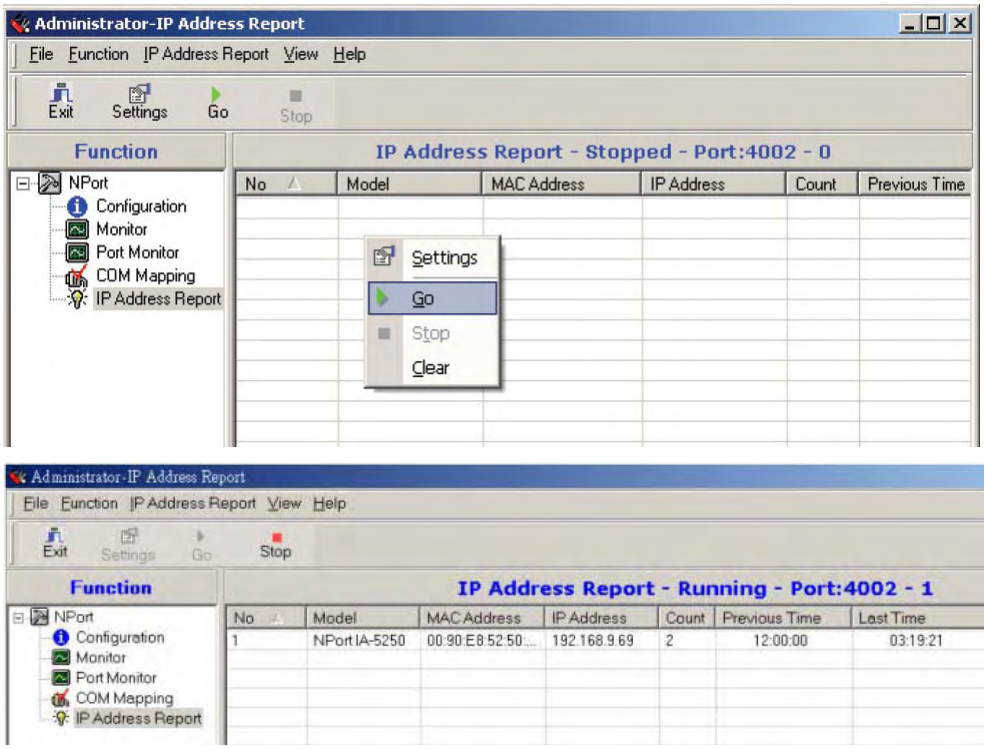


2. Select the **IP Address Report**, and click the right mouse button to select **Settings**.



3. Configure the Local Listen Port to be the same as the NPort IA5250I/5250I-T's "Auto report to UDP port" setting.

4. Click **Go** to start receiving the Auto IP address report from the NPort IA5250I/5250I-T.



7

NPort CE Driver Manager for Windows CE

The following topics are covered in this chapter:

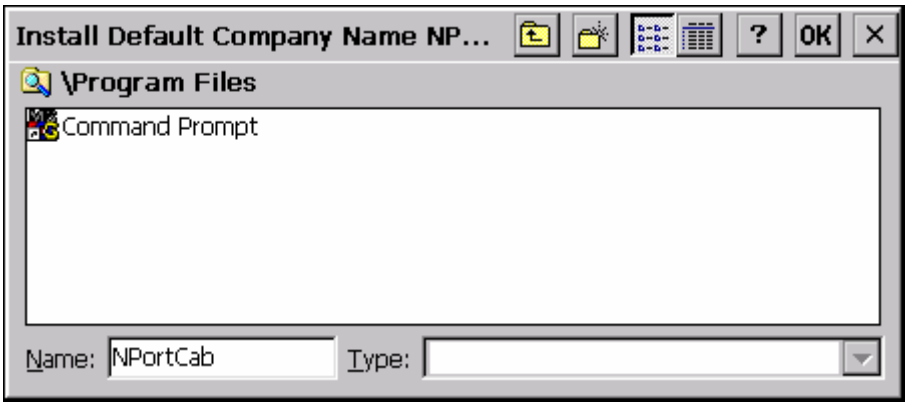
- **Overview**
- **Installing NPort CE Driver Manager**
- **Using NPort CE Driver Manager**

Overview

NPort CE Driver Manager is designed for use with NPort 5000 serial ports that are set to Real COM mode. The software manages the installation of drivers that allow you to map unused COM ports on your PC to serial ports on the NPort 5000. These drivers are designed for use with Windows CE 5.0/6.0. When the drivers are installed and configured, devices that are attached to serial ports on the NPort 5000 will be treated as if they were attached to your PC's own COM ports.

Installing NPort CE Driver Manager

1. Copy "**NPortCab.cab**" to Windows CE and start to install driver by double clicking on it.
2. Click on "**OK**" to complete the installation when the following screen appears.

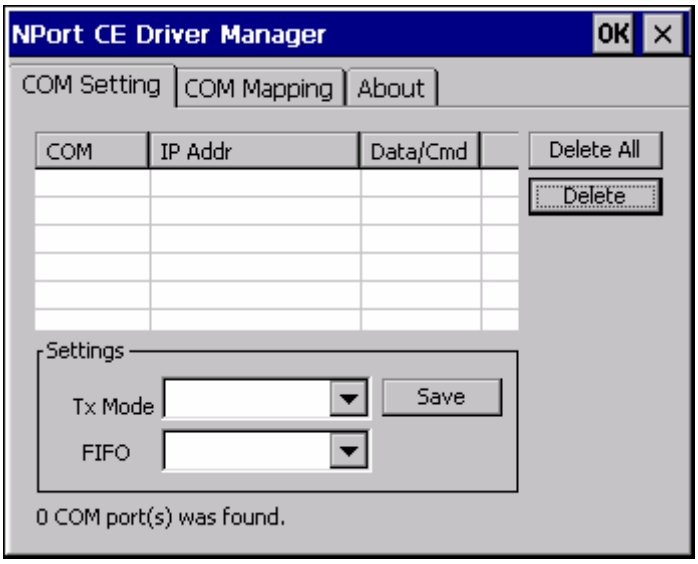


3. Driver installation is now complete and the "NPortCab.cab" icon disappear from the screen. This is normal when installing drivers in Windows CE.

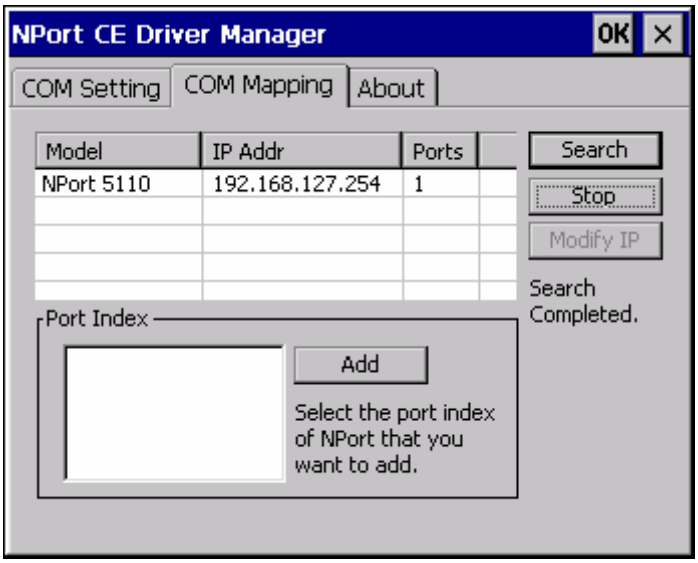
Using NPort CE Driver Manager

After you install NPort CE Driver Manager, you can set up the NPort's serial ports as remote COM ports for your Windows CE. Make sure that the serial port(s) on your NPort are set to Real COM mode when mapping COM ports with NPort CE Driver Manager.

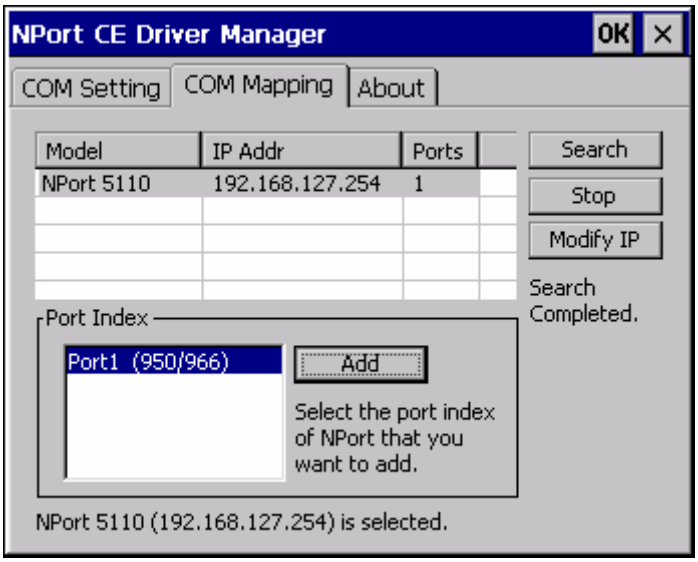
1. Go to **Start → Programs → NPort CE Driver Manager**.



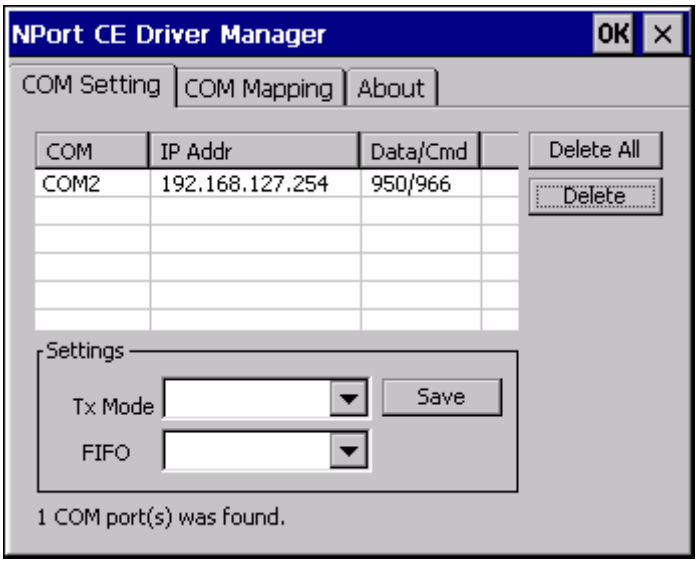
2. Click on the **COM Mapping** page and then the "Search" button to scan for NPort servers.



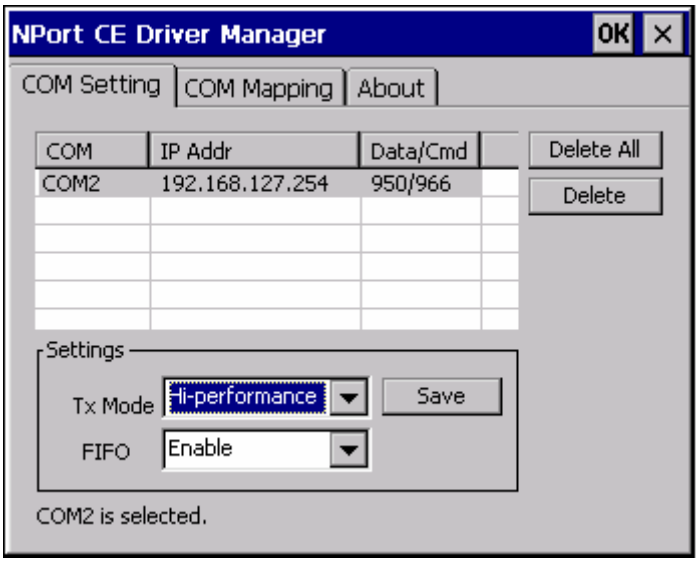
3. All NPort servers that were located will appear in the NPort CE Driver Manager window. Click on the server whose COM ports you would like to map to and then select the port index. Note that multiple selections are allowed.
4. Select the port(s) at the Port Index and then click on the "**Add**" button to map to the COM Port(s).



5. Return to the "**COM Setting**" page. You should be able to see the newly mapped COM Port(s).



6. To configure the settings for a particular COM Port, select the row of the desired port, and then modify the setting in the "**Settings**" panel, as shown below.



Tx Mode

"Hi-Performance" is the default for Tx mode. After the driver sends data to the NPort server, the driver immediately issues a "Tx Empty" response to the program. Under "Classical mode," the driver will not send the "Tx Empty" response until after confirmation is received from the NPort server's serial port. This causes lower throughput. Classical mode is recommended if you want to ensure that all data is sent out before further processing.

FIFO

If FIFO is disabled, the NPort server will transmit one byte each time the Tx FIFO becomes empty, and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput.

8

IP Serial LIB

The following topics are covered in this chapter:

- **Overview**
- **IP Serial LIB Function Groups**
- **Example Program**

Overview

What is IP Serial Library?

IP Serial Library is a Windows library with frequently used serial command sets and subroutines. IP Serial Library is designed to reduce the complexity and poor efficiency of serial communication over TCP/IP. For example, Telnet can only transfer data, but it can't monitor or configure the serial line's parameters.

Why Use IP Serial Library?

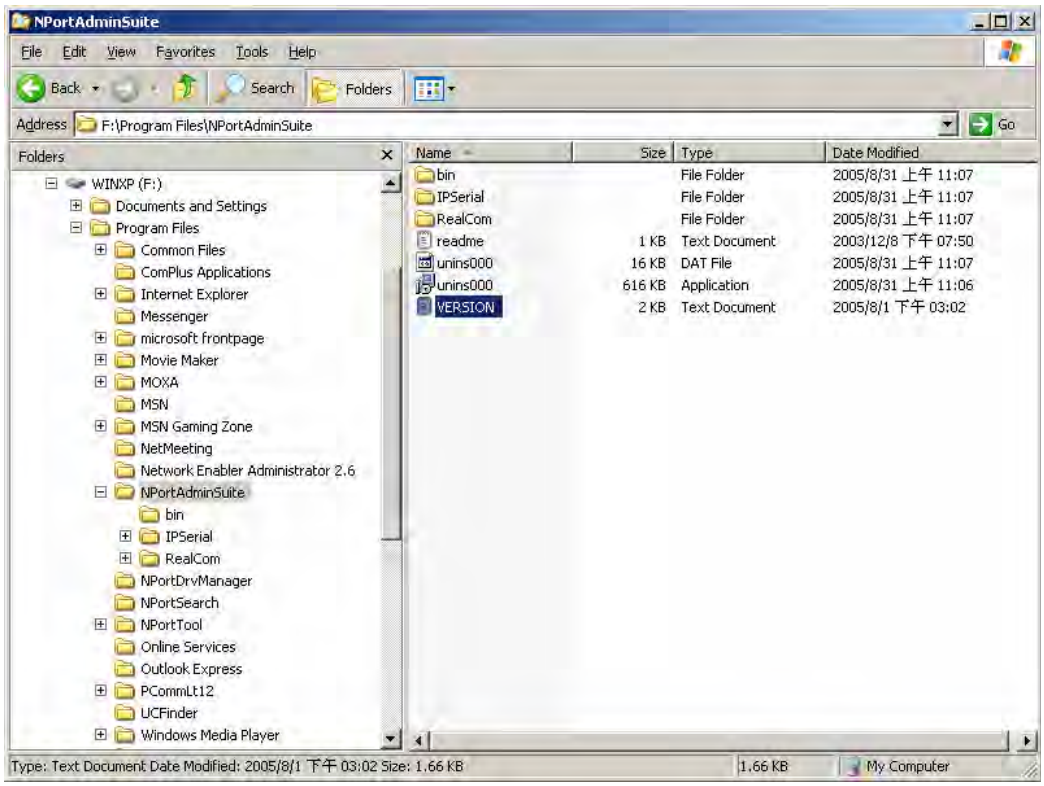
For programmers who are familiar with serial communication, IP Serial Library provides well-designed function calls that have the same style as Moxa's PComm Library.

IP Serial Library is amazingly simple and easy to understand. By including it in your VB, C, or Delphi programming environment, you can program your own TCP/IP application with the ability to control serial communication parameters.

NPort IA5250I/5250I-T serial device servers use 2 TCP ports for communication between the NPort IA5250I/5250I-T and host computer's Real COM driver. The NPort IA/5250I/5250I-T uses a data port and command port to provide pure data transfer without decode and encode. Compared to using only one TCP port to control serial communication (such as RFC 2217), IP Serial Library uses a command port to communicate with the NPort IA5250I/5250I-T in user's program. IP Serial Library not only runs with excellent efficiency but also runs without any decode or encode problems.

How to install IP Serial Library?

IP Serial Lib comes with the NPort IA5250I/5250I-T Administration Suite. Refer to the IP Serial directory for more detail about the function definitions.



IP Serial LIB Function Groups

Server Control	Port Control	Input/Output Data	Port Status Inquiry	Miscellaneous
nsio_init	nsio_open	nsio_read	nsio_lstatus	nsio_break
nsio_end	nsio_close	nsio_SetReadTimeouts	nsio_data_status	nsio_break_on
nsio_resetserver	nsio_ioctl	nsio_write		nsio_break_off
nsio_checkalive	nsio_flowctrl	nsio_SetWriteTimeouts		nsio_breakcount
	nsio_DTR			
	nsio_RTS			
	nsio_lctrl			
	nsio_baud			
	nsio_resetport			

Example Program

```
char NPortip="192.168.1.10";
char buffer[255];                                   /*data buffer, 255 chars */
int port = 1;                                       /*1st port */
int portid;                                         /* port handle */
nsio_init();                                        /*initial IP Serial Library */
portid = nsio_open(NPortip, port);                  /*1st port, NPort IP=192.168.1.10 */
nsio_ioctl(portid, B9600, (BIT_8 | STOP_1 |         /*set 9600, N81 */
P_NONE) );
sleep(1000);                                        /* wait for 1000 ms for data */
nsio_read(port, buffer, 200);                       /* read 200 bytes from port 1 */
nsio_close(portid);                                 /* close this serial port */
nsio_end();                                         /* close IP Serial Library */
```

A

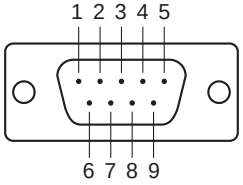
Pinouts and Cable Wiring

In this appendix, we cover the following topics.

- **Port Pinout Diagrams**
  - RS-232/422/485 (male DB9) Pinouts
  - Power Input and Relay Output Pinouts
- **Cable Wiring Diagrams**
  - Serial Cables

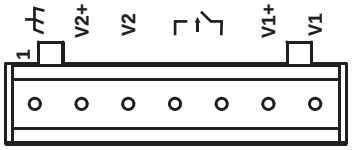
Port Pinout Diagrams

RS-232/422/485 (male DB9) Pinouts



Pin	RS-232	RS-422/ 4-wire RS-485	2-wire RS-485
1	DCD	TxD-(A)	---
2	RxD	TxD+(B)	---
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	---	---
7	RTS	---	---
8	CTS	---	---
9	---	---	---

Power Input and Relay Output Pinouts

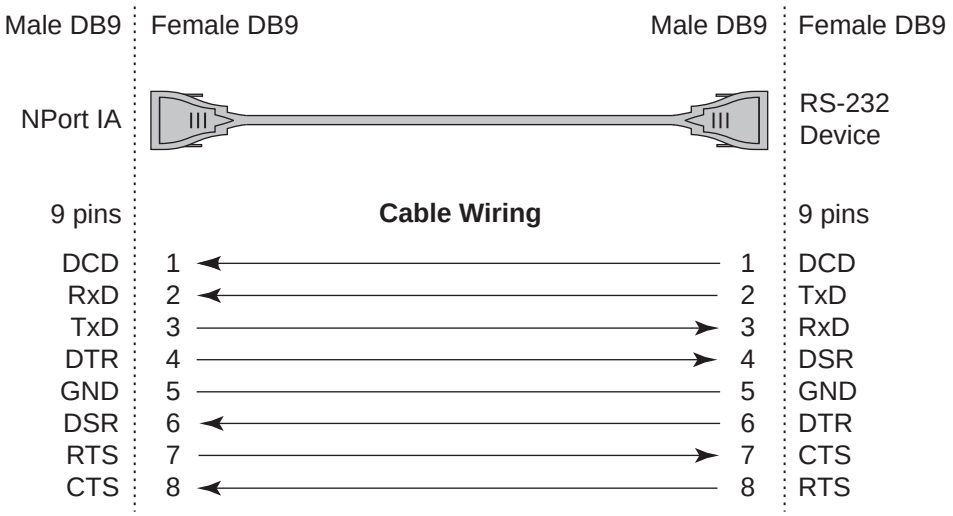


⏚	V2+	V2-			V1+	V1-
Shielded Ground	DC Power input 1	DC Power input 1	Relay output	Relay output	DC Power input 2	DC Power input 2

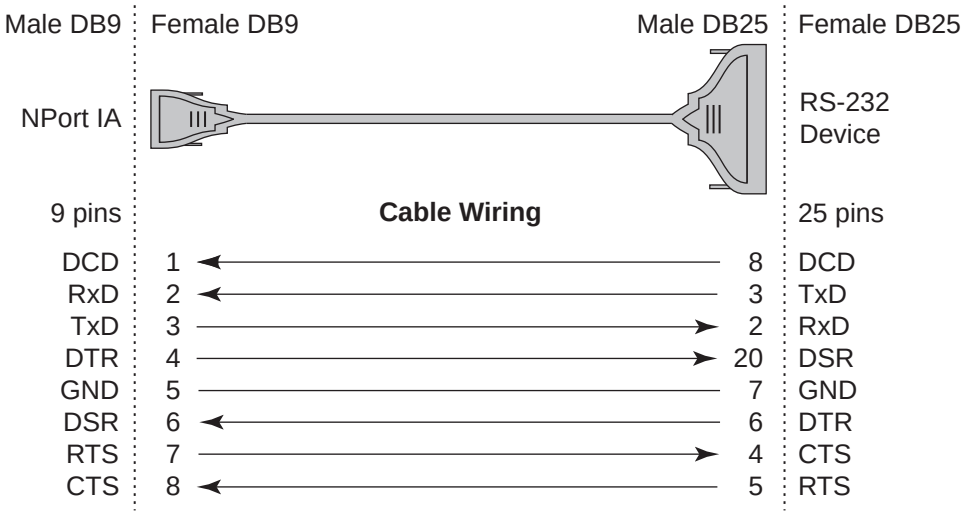
Cable Wiring Diagrams

Serial Cables

Female DB9 to Male DB9



Female DB9 to Male DB25



B

Well Known Port Numbers

In this appendix, which is included for your reference, we provide a list of Well Known port numbers that may cause network problems if you set NPort IA5250I/5250I-T to one of these ports. Refer to RFC 1700 for Well Known port numbers, or refer to the following introduction from the IANA.

The port numbers are divided into three ranges: the Well Known Ports, the Registered Ports, and the Dynamic and/or Private Ports.

The Well Known Ports are those from 0 through 1023.

The Registered Ports are those from 1024 through 49151.

The Dynamic and/or Private Ports are those from 49152 through 65535.

The Well Known Ports are assigned by the IANA, and on most systems, can only be used by system processes or by programs executed by privileged users. The following table shows famous port numbers among the well-known port numbers. For more details, please visit the IANA website: http://www.iana.org/assignments/port-numbers

TCP Socket	Application Service
0	reserved
1	TCP Port Service Multiplexor
2	Management Utility
7	Echo
9	Discard
11	Active Users (systat)
13	Daytime
15	Netstat
20	FTP data port
21	FTP CONTROL port
23	Telnet
25	SMTP (Simple Mail Transfer Protocol)
37	Time (Time Server)
42	Host name server (names server)
43	Whois (nickname)

49	(Login Host Protocol) (Login)
TCP Socket	**Application Service**
53	Domain Name Server (domain)
79	Finger protocol (Finger)
80	World Wide Web HTTP
119	Network News Transfer Protocol (NNTP)
123	Network Time Protocol
213	IPX
160 – 223	Reserved for future use

UDP Socket	**Application Service**
0	reserved
2	Management Utility
7	Echo
9	Discard
11	Active Users (systat)
13	Daytime
35	Any private printer server
39	Resource Location Protocol
42	Host name server (names server)
43	Whois (nickname)
49	(Login Host Protocol) (Login)
53	Domain Name Server (domain)
69	Trivial Transfer Protocol (TETP)
70	Gopler Protocol
79	Finger Protocol
80	World Wide Web HTTP
107	Remote Telnet Service
111	Sun Remote Procedure Call (Sunrpc)
119	Network News Transfer Protocol (NNTP)
123	Network Time Protocol (nnp)
161	SNMP (Simple Network Mail Protocol)
162	SNMP Traps
213	IPX (Used for IP Tunneling)

C

SNMP Agents with MIB II & RS-232 Like Group

NPort IA5250I/5250I-T has built-in SNMP (Simple Network Management Protocol) agent software. It supports SNMP Trap, RFC1317 RS-232 like group and RFC 1213 MIB-II. The following table lists the standard MIB-II group, as well as the variable implementation for the NPort IA5250I/5250I-T.

RFC1213 MIB-II supported SNMP variables:

System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysDescr	itNumber	ipForwarding	IcmpInMsgs
SysObjectID	ifIndex	ipDefaultTTL	IcmpInErrors
SysUpTime	ifDescr	ipInreceives	IcmpInDestUnreachs
SysContact	ifType	ipInHdrErrors	IcmpInTimeExcds
SysName	ifMtu	ipInAddrErrors	IcmpInParmProbs
SysLocation	ifSpeed	ipForwDatagrams	IcmpInSrcQuenchs
SysServices	ifPhysAddress	ipInUnknownProtos	IcmpInRedirects
	ifAdminStatus	ipInDiscards	IcmpInEchos
	ifOperStatus	ipInDelivers	IcmpInEchoReps
	ifLastChange	ipOutRequests	IcmpInTimestamps
	ifInOctets	ipOutDiscards	IcmpTimestampReps
	ifInUcastPkts	ipOutNoRoutes	IcmpInAddrMasks
	ifInNUcastPkts	ipReasmTimeout	IcmpOutMsgs
	ifInDiscards	ipReasmReqds	IcmpOutErrors
	ifInErrors	ipReasmOKs	IcmpOutDestUnreachs
	ifInUnknownProtos	ipReasmFails	IcmpOutTimeExcds
	ifOutOctets	ipFragOKs	IcmpOutParmProbs
	ifOutUcastPkts	ipFragFails	IcmpOutSrcQuenchs
	ifOutNUcastPkts	ipFragCreates	IcmpOutRedirects
	ifOutDiscards	ipAdEntAddr	IcmpOutEchos

	ifOutErrors	ipAdEntIfIndex	IcmpOutEchoReps
System MIB	**Interfaces MIB**	**IP MIB**	**ICMP MIB**
SysServices	ifOutQLen	ipAdEntNetMask	IcmpOutTimestamps
	ifSpecific	ipAdEntBcastAddr	IcmpOutTimestampReps
		ipAdEntReasmMaxSize	IcmpOutAddrMasks
		IpNetToMediaIfIndex	IcmpOutAddrMaskReps
		IpNetToMediaPhysAddress	
		IpNetToMediaNetAddress	
		IpNetToMediaType	
		IpRoutingDiscards	

UDP MIB	**TCP MIB**	**SNMP MIB**
UdpInDatagrams	tcpRtoAlgorithm	snmpInPkts
UdpNoPorts	tcpRtoMin	snmpOutPkts
UdpInErrors	tcpRtoMax	snmpInBadVersions
UdpOutDatagrams	tcpMaxConn	snmpInBadCommunityNames
UdpLocalAddress	tcpActiveOpens	snmpInASNParseErrs
UdpLocalPort	tcpPassiveOpens	snmpInTooBigs
	tcpAttempFails	snmpInNoSuchNames
Address Translation MIB	tcpEstabResets	snmpInBadValues
AtIfIndex	tcpCurrEstab	snmpInReadOnlys
AtPhysAddress	tcpInSegs	snmpInGenErrs
AtNetAddress	tcpOutSegs	snmpInTotalReqVars
Address Translation MIB	**TCP MIB**	**SNMP MIB**
AtNetAddress	tcpRetransSegs	snmpInTotalSetVars
	tcpConnState	snmpInGetRequests
	tcpConnLocalAddress	snmpInGetNexts
	tcpConnLocalPort	snmpInSetRequests
	tcpConnRemAddress	snmpInGetResponses
	tcpConnRemPort	snmpInTraps
	tcpInErrs	snmpOutTooBigs
	tcpOutRsts	snmpOutNoSuchNames
		snmpOutBadValues
		snmpOutGenErrs
		snmpOutGetRequests
		snmpOutGetNexts

		snmpOutSetRequests
Address Translation MIB	**TCP MIB**	**SNMP MIB**
		snmpOutGetResponses
		snmpOutTraps
		snmpEnableAuthenTraps

RFC1317: RS-232 MIB objects

Generic RS-232-like Group	**RS-232-like General Port Table**	**RS-232-like Asynchronous Port Group**
rs232Number	rs232PortTable	rs232AsyncPortTable
	rs232PortEntry	rs232AsyncPortEntry
	rs232PortIndex	rs232AsyncPortIndex
	rs232PortType	rs232AsyncPortBits
	rs232PortInSigNumber	rs232AsyncPortStopBits
	rs232PortOutSigNumber	rs232AsyncPortParity
	rs232PortInSpeed	
	rs232PortOutSpeed	

The Input Signal Table	**The Output Signal Table**
rs232InSigTable	rs232OutSigTable
rs232InSigEntry	rs232OutSigEntry
rs232InSigPortIndex	rs232OutSigPortIndex
rs232InSigName	rs232OutSigName
rs232InSigState	rs232OutSigState

D

Compliance Notice

CE Warming

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take appropriate measures.

Federal Communications Commission Statement

FCC - This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Warming

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.